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United States
Department of
Agriculture

**Forest
Service**

FS-403

Final Environmental Impact Statement

1985-2030
Resources Planning Act
Program

United States
Department of
Agriculture

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Final Environmental Impact Statement

1985-2030
Resources Planning Act Program

October 1986

United States Department of Agriculture
Forest Service
Washington Office
12th & Independence SW
P.O. Box 2417
Washington, DC 20013

Reply to: 1910

Date: September 19, 1986

Dear Reader:

This Final Environmental Impact Statement is a companion to the document, "A Recommended Renewable Resources Program: 1985-2030--1985 Update." It describes the affected environment and the potential consequences of implementing the Program as well as 10 other program alternatives.

The Program is the third prepared for the Forest Service in response to the Forest and Rangeland Renewable Resources Planning Act of 1974, as amended (RPA). It responds to, "An Assessment of the Forest and Range Land Situation in the United States" completed in 1979, and its Supplement prepared in 1984. The RPA calls for an Assessment every 10 years and a Program every 5 years.

Future availability of our forest and rangeland renewable resources depends on careful planning of their management and use today. The Program is designed with this in mind, but also recognizes that the needs of our citizens today must also be considered.

The Recommended Program was developed through careful economic, social, physical, and environmental analyses. It responds to current economic and policy guidelines, and is designed to meet legal, environmental, and multiresource objectives. Concerned citizens participated in the development process during two formal public involvement periods. Their comments, suggestions, and reviews were used in shaping the final Program, as was input from other Federal agencies, States, academic institutions, and a wide variety of special interest groups.

The 1985 RPA Recommended Program was submitted to Congress by the President together with his Statement of Policy intended to be used in framing his Administration's budget requests. Use of this Final Environmental Impact Statement should provide details on the potential consequences of the Program for each of the major components of the Forest Service: National Forest System, State and Private Forestry, and Research.

Sincerely,

R. MAX PETERSON
Chief

Enclosure

PRESIDENT'S STATEMENT OF POLICY ON THE 1985 RPA RECOMMENDED PROGRAM FOR THE FOREST SERVICE

The fundamental policy principle for the management of Forest Service programs in my Administration is the principle of judicious balance.

In both long-range planning and in day-to-day decisions our forest managers and scientists must strive for judicious balance among:

> the needs of this and future generations of Americans for the various benefits obtainable from our Nation's forest lands;
>
> the need for protection of unspoiled wilderness lands and the need for harvesting timber and forage and recovering minerals to sustain a growine national economy;
>
> the need to produce direct economic benefits for our people, and the need to produce benefits that do not have a specific dollar return such as outdoor recreation opportunities and wildlife habitat;
>
> the need to invest in the National Forests and the need to meet the other demands on the Federal budget each year; and
>
> the share of the costs of the system to be paid by the general taxpayers, and the share to be paid by the specific users of our National Forests.

Achieving the balance we seek is not an easy process. Because we as individuals and as interest groups may place widely divergent values on a particular potential management action, and because our society encourages active participation by the public in governmental decisions, our major choices are often preceded by conflict and followed by dissent. Nevertheless we have a responsibility to make the choices and decisions necessary to manage our forest resources, and we must make them judiciously.

During my Administration the number of designated wilderness areas managed by the Forest Service has doubled, to 329 areas comprising over 32 million acres, while the remaining 159 million acres, managed under the principles of multiple use and sustained yield, have produced 11 billion board feet of timber harvest annually, and 225 million recreation visitor days annually, as well as productive wildlife habitat and oil, gas, and other minerals to sustain our economy. Capability on non-Federal lands has grown as well, as has our store of new technology to accomplish these output levels in a way that carefully preserves environmental and economic values. Where conflict in the management of these resources was inevitable, we have sought the judicious balance.

The Secretary of Agriculture's Recommended Program for the Forest Service, called for by the Resources Planning Act, sets forth a plan within which we can achieve the balance we seek. It identifies a reasonable range of management directions, outputs, costs, and goals for the long-term future. It provides the Congress and the public with a valuable information base on which to continue their informed participation in the decisions affecting our National Forests.

I trust we will continue to work together to ensure that our valuable forest resources are managed judiciously for the benefit of our people -- of this generation and of generations yet to come.

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Summary

PURPOSE AND NEED FOR ACTION (CHAPTER 1)

This final document is an important step in developing the third Program as required by the amended Forest and Rangeland Renewable Resources Planning Act (RPA). The RPA directs the Secretary of Agriculture to periodically assess the status of the Nation's forest and range land resources and recommend a Forest Service program for management and use of these resources. It requires development of an Assessment every 10 years and a Recommended Program every 5 years. The Program prepared by the Forest Service responds to the natural resource situation as projected in the 1979 RPA Assessment and a recently completed Supplement.

There are four major chapters which represent the crux of this document. This summary presents a concise overview of the major elements of these chapters.

This final Environmental Impact Statement (FEIS) describes the 10 1985 RPA alternatives as well as the Recommended Program. It also describes the environmental consequences of implementing each alternative and the Recommended Program.

Role of the Forest Service

Forest Service cooperation with many Federal, State, and local governments, as well as many individuals and organizations, both public and private, is essential for developing and carrying out the Recommended Program. Forest Service activities are divided into three major areas: National Forest System, State and Private Forestry, and Research.

National Forest System--the Forest Service is responsibile for multiple use management of this country's National Forests and Grasslands, which comprise about 191 million acres.

State and Private Forestry--Federal forestry programs extend financial and technical assistance to the States and, through them, to private landowners and others.

Research--Forest Service research seeks to solve important problems related to the protection, management, and wise use of forest and range land through development of knowledge and technology.

The Assessment

The RPA Program is based on a comprehensive assessment of present and anticipated uses, demands for, and supplies of renewable resources from the Nation's public and private forest and range lands.

The 1979 RPA Assessment and the Assessment Supplement represent the most recent analysis of the Nation's renewable resource situation, and identify opportunities to increase supplies of renewable resources to meet projected demands. The opportunities identified in the Assessment helped set the scope of the national goals to guide development of the 1985 RPA Program.

National Goals

The 1979 Assessment identified many opportunities to increase supplies of renewable resources to meet projected demands. Chapter 1 describes these opportunities, which were grouped into nine opportunity areas. Goals were then developed for each opportunity area.

Goals for the 1985 RPA Program are broad statements that describe a desired future resource situation for the Nation. They reflect leadership responsibilities of the Forest Service but recognize the importance of other agencies and groups. The goals for each opportunity area are:

Water

PROVIDE FOR FAVORABLE CONDITIONS OF WATERFLOW, HELP PROVIDE FOR CONSUMPTIVE AND NONCONSUMPTIVE USES OF WATER, AND HELP MEET LONG-TERM WATER QUALITY NEEDS THROUGH MANAGEMENT, ASSISTANCE, AND TECHNOLOGY. INCREASE WATER YIELDS WHERE COST EFFECTIVE IN WATER-SHORT AREAS, CONSISTENT WITH OTHER RESOURCE USES AND VALUES. REDUCE FLOOD LOSSES WHERE ECONOMICALLY FEASIBLE.

Minerals and Energy

PROVIDE FOR MINERAL PROSPECTING AND EXPLORATION, AND RESPOND TO PROPOSALS FOR MINERALS DEVELOPMENT, IN CONCERT WITH OTHER RESOURCE USES AND VALUES, AND PROVIDE TECHNOLOGY FOR RECLAMATION OF DISTURBED LANDS. EMPHASIZE ENERGY MINERALS AND MINERALS OF STRATEGIC IMPORTANCE.

Range

PROVIDE FORAGE TO PROMOTE THE ECONOMIC STABILITY OF DEPENDENT LIVESTOCK PRODUCERS AND RURAL COMMUNITIES BY MAINTAINING THE CURRENT LEVEL OF FORAGE PRODUCTION ON NATIONAL FOREST SYSTEM LANDS, AND EXPANDING THIS LEVEL OF PRODUCTION WHERE COST EFFECTIVE. DEVELOP AND APPLY TECHNOLOGY, WHERE COST EFFECTIVE, TO IMPROVE RANGE CONDITIONS AND TO COORDINATE LIVESTOCK AND OTHER MULTIPLE USES OF RANGELAND.

Recreation

PROVIDE OUTDOOR RECREATION OPPORTUNITIES AND EXPERIENCES BY PROVIDING ACCESS, SERVICES, AND FACILITIES, WHERE COST EFFECTIVE, THAT ARE NECESSARY TO MEET THE NATIONAL FOREST SYSTEM SHARE OF THE NATION'S DEMAND FOR OUTDOOR RECREATION, CONSISTENT WITH OTHER RESOURCE USES AND VALUES. PROVIDE TECHNOLOGY TO IMPROVE AND EXTEND RECREATION OPPORTUNITIES. MOVE TOWARD RECREATION USERS ASSUMING A GREATER SHARE OF THE COST OF PROVIDING RECREATION OPPORTUNITIES.

Wilderness

MANAGE NATIONAL FOREST WILDERNESS AND PROVIDE RESEARCH TO ENHANCE THE QUALITY OF WILDERNESS EXPERIENCES AND MEET OTHER PURPOSES OF THE WILDERNESS ACT. RECOMMEND ADJUSTMENTS WHERE APPROPRIATE TO THE NATIONAL WILDERNESS PRESERVATION SYSTEM BASED ON THE RELATIVE VALUES INVOLVED IN A WAY WHICH COMPLETES THE NATIONAL FOREST PORTION OF THAT SYSTEM TO BEST MEET THE NEEDS OF THE AMERICAN PEOPLE.

Timber

MEET GROWING DOMESTIC AND EXPORT DEMANDS FOR WOOD PRODUCTS BY USING ECONOMIC OPPORTUNITIES FOR MANAGEMENT AND ASSISTANCE, AND BY DEVELOPMENT OF NEW TECHNOLOGY TO INCREASE AND EXTEND TIMBER SUPPLIES WHILE PROTECTING THE ENVIRONMENT AND PROVIDING OPPORTUNITIES FOR WILDLIFE, RECREATION, AND OTHER MULTIPLE USES OF FOREST LANDS.

Wildlife and Fish

ASSURE A DIVERSE, WELL-DISTRIBUTED PATTERN OF HABITATS FOR VIABLE POPULATIONS OF WILDLIFE AND FISH SPECIES IN COOPERATION WITH STATES AND OTHER AGENCIES. PROVIDE TECHNOLOGY AND MANAGE HABITAT TO HELP RECOVER THREATENED AND ENDANGERED SPECIES AND INCREASE THE PRODUCTIVITY FOR NATIVE GAME AND NONGAME SPECIES CONSISTENT WITH OTHER RESOURCE USES AND VALUES AND USER DEMANDS.

International Forestry

EXERCISE LEADERSHIP AND COOPERATION WITH APPROPRIATE UNITED STATES AGENCIES, OTHER NATIONS AND INTERNATIONAL ORGANIZATIONS TOWARD ASSISTING OTHER NATIONS IN IMPROVING MANAGEMENT OF THEIR FOREST AND RANGE LAND RESOURCES SO AS TO MEET THEIR OWN NEEDS, PROTECT THE GLOBAL ENVIRONMENT, AND AVOID EXTINCTION OF SPECIES. IDENTIFY POTENTIAL OPPORTUNITIES FOR INTERNATIONAL TRADE IN FOREST PRODUCTS. ENGAGE IN INTERCHANGE OF RESEARCH AND TECHNICAL ASSISTANCE WITH OTHER NATIONS.

Protection and Support

COMMENSURATE WITH NATURAL RESOURCE GOALS FOR FOREST AND RANGE LANDS, PLAN AND EXECUTE COST-EFFECTIVE PROTECTION AND PROGRAM SUPPORT IN FACILITIES, FIRE, PESTS, LANDS, AND OTHER SUPPORTING ACTIVITIES. EMPHASIZE PREVENTION, AND WHERE APPROPRIATE, MITIGATION OF RESOURCE LOSS AND DAMAGE. COOPERATE WITH LOCAL, STATE, OTHER FEDERAL AGENCIES AND PRIVATE LANDOWNERS IN RESEARCH, FOREST PEST MANAGEMENT, WILDLAND FIRE MANAGEMENT, AND OTHER RESOURCE PROTECTION PROGRAMS. PARTICIPATE IN ECONOMICALLY PRODUCTIVE HUMAN RESOURCE PROGRAMS THAT SUPPORT COMMUNITY DEVELOPMENT AND STABILITY.

PROGRAM ALTERNATIVES AND THEIR COMPARISON (CHAPTER 2)

Chapter 2 displays and compares 10 alternatives and the 1985 Recommended Program. The alternatives represent differing mixes of resource emphases. Consequently, progress toward achievement of specific national goals varies by alternative.

Each alternative is a complete unit that presents a different combination of management activities and costs that, in turn, produce varying output levels of goods and services. The alternatives are described and compared by the three areas--National Forest System, State and Private Forestry, and Research. At a minimum, individual resource objectives comply with minimum legal requirements. All alternatives are designed to prevent significant impairment of the land's productivity.

Alternatives Considered in Detail

The Recommended Program

The Recommended Program is an amalgam of the various alternative programs described in the Draft Environmental Impact Statement (DEIS). It emphasizes reduction of the Federal budget deficit, increased monetary returns from the National Forest System (NFS), maximum net public benefits, and meeting environmental and legal requirements. The Recommended Program is presented as a range of activities and outputs in order to reflect a short-term policy aimed at reducing the Federal budget deficit and a long-term policy for efficient management of natural resources. In order to describe the scope of the Program, it is discussed in terms of the High and Low Bounds of the range. The course of action described at the High Bound would begin immediately to make new investments and to maintain and restore existing facilities in order to meet the long-term renewable resource goals developed from the findings of the Assessment. At the Low Bound, the Program would be held constant through 1990 and expansion would be deferred in order to make a direct contribution to reduction of the Federal deficit by 1991.

Alternative 1 (Constant Output)

Alternative 1 would continue constant level and mix of outputs. The FY 1982 appropriations bill was used as a starting point for defining the constant output level.

Alternative 2 (High Market)

Alternative 2 would emphasize achievement of high output levels for timber, range, minerals, and other market resources. Production of nonmarket outputs would be at economically efficient levels, consistent with the market emphasis.

Alternative 3 (High Nonmarket)

Alternative 3 would emphasize achievement of high output levels of water, wildlife and fish, recreation, wilderness, and other nonmarket resources. Production of market outputs would be at economically efficient levels, consistent with the nonmarket emphasis.

Alternative 3A (High Wilderness)

Alternative 3A is similar to Alternative 3 (High Nonmarket) except wilderness acreage in the National Wilderness Preservation System would increase to 52 million acres by 2030, nine million more than Alternative 3. Wilderness estimates are based on the premise that all wilderness study and further planning areas would be designated as wilderness, as well as significant portions of areas recommended for nonwilderness in RARE II. The latter recommendations were based upon legislative proposals pending in the 98th Congress.

Alternative 4 (High All Resources)

Alternative 4 would achieve high output levels of both market and nonmarket resources.

Alternative 5 (Reduced)

Alternative 5 would reduce Federal emphasis on renewable resource management, and encourage State and local governments and the private sector to increase market and nonmarket outputs. All Forest Service programs would be below current levels.

Alternative 6 (Implement Plans)

Alternative 6 would mplement National Forest land and resource management plans, State forest resource plans, and research plans.

Alternative 7 (High Present Net Value)

Alternative 7 would provide resource outputs at economically efficient levels, subject to meeting minimum legal requirements and protecting community stability.

Alternative 8 (1980 RPA)

Alternative 8 meets the requirement of no action as the 1980 RPA Program is the plan currently in effect. Management direction would meet the objectives of the 1980 RPA Program with emphasis to manage all resources at a high level.

Alternative 9 (High Productivity)

Alterantive 9 would achieve the highest timber output, by relaxing management constraints, and high output levels of other market resources. The objective is to produce high market outputs that are economically viable. This alternative assumes a change in the current fee system with revenues collected available for recreation management, wilderness, and wildlife use.

Comparison of Alternatives

Table 1 shows selected National Forest System, State and Private Forestry, and Research outputs and costs for each of the alternatives and the Recommended Program, for the years 1990 and 2030. Figure 1 summarizes the response of each to the National goals.

AFFECTED ENVIRONMENT (CHAPTER 3)

This chapter describes the environment that would be affected by the implementation of an RPA Program. The description relies heavily on the information contained in the 1979 Assessment and the Assessment Supplement.

The affected environment is examined by the resource opportunity areas--timber, range, recreation, wilderness, wildlife and fish, minerals, water, international forestry, and protection and support which includes activities such as fire protection, insect and disease control, maintenance of air quality, and management of lands and soils. Economic and social factors are also described.

The land base includes 1.6 billion acres classified as forestland, rangeland, and water. The National Forests and Grasslands comprise 191 million acres or about 12 percent of this total. The environment affected by the Program involves not only the National Forest and Grasslands but also State and private lands throughout the United States. Consequently, each of the resource discussions presents an overview, where applicable, of all lands impacted.

ENVIRONMENTAL CONSEQUENCES (CHAPTER 4)

Environmental consequences are the environmental changes that would be expected from implementing an Alternative. The varying amounts of activities and uses between alternatives result in differing levels of environmental consequences which are described in terms of economic, social, biological, and physical effects (table 2).

In all alternatives and the Recommended Program, the long-term productivity of the land is maintained; mitigating and coordinating measures are applied to protect the physical and biological environment and social and economic benefits are produced.

Economic Effects

The economic effects are described by the criteria of present net value (total, market, and receipts), total benefits, returns to U.S. Treasury, returns to States, and consumers' benefits. Two of these measures, present net value and returns to the U.S. Treasury, are shown in table 2.

Table 1.--Comparison of Alternatives by Program Area and Selected Outputs and Costs for Years 1990 and 2030[1]

NATIONAL FOREST SYSTEM

Alternative	Timber Offered (Billion Board Feet)		Permitted Grazing (Million AUMs)		Recreation Use (Million Visitor Days)		Wilderness Area (Million Acres)		Wildlife/ Fish Use (Million User Days)		Total NFS Cost (Million Dollars)	
	1990	2030	1990	2030	1990	2030	1990	2030	1990	2030	1990	2030
Low Bound	9.0	15.6	9.8	10.3	216	340	35	35	20	28	1386	2578
High Bound	11.6	20.0	9.8	11.3	233	400	37	40	28	40	2048	2651
1 (Constant)	11.1	10.5	9.7	9.7	215	218	34	34	25	26	1933	1825
2 (Market)	15.0	19.7	10.7	13.3	237	371	33	35	28	35	2675	2841
3 (Nonmarket)	10.5	12.0	9.5	9.5	254	438	39	43	31	43	2369	2369
3A (High Wilderness)	10.5	12.0	9.5	9.4	254	437	39	52	30	43	2364	2366
4 (All Resources)	14.6	17.4	10.2	10.9	249	417	38	39	30	39	2691	2675
5 (Reduced)	8.7	8.1	8.1	7.2	173	181	33	33	22	20	1478	1460
6 (Implement Plans)	12.8	15.5	10.1	10.7	244	391	37	38	29	39	2573	2568
7 (High PNV)	12.9	14.6	9.8	9.7	245	417	35	39	29	39	2462	2414
8 (1980 RPA)	13.1	15.4	10.2	10.9	251	387	39	41	29	41	2600	2563
9 (High Productivity)	15.9	21.8	10.7	12.2	233	415	33	35	28	38	2760	3023

STATE AND PRIVATE FORESTRY

Alternative	Reforestation (Thousand Acres)		Timber Stand Improvement (Thousand Acres)		Improved Wood Utiliz. (Million Cubic Feet)		Total S&PF Cost (Million Dollars)	
	1990	2030	1990	2030	1990	2030	1990	2030
Low Bound	323	1061	156	633	64	250	22	86
High Bound	866	1061	438	633	145	250	121	179
1 (Constant)	403	402	196	197	132	132	90	90
2 (Market)	1291	1380	1001	1114	292	324	255	283
3 (Nonmarket)	637	779	493	712	172	217	158	170
3A (High Wilderness)	637	779	493	712	172	217	158	170
4 (All Resources)	852	1134	693	1042	226	272	223	241
5 (Reduced)	293	292	142	143	94	95	68	68
6 (Implement Plans)	954	1061	509	633	223	261	207	268
7 (High PNV)	1005	1108	609	719	247	270	167	198
8 (1980 RPA)	852	1134	693	1042	226	272	224	241
9 (High Productivity)	1005	1108	609	719	247	270	177	207

RESEARCH (Costs in Million 1982 Dollars)

Alternative	Timber		Range, Recreation, Wilderness & Wildlife		Water, Soils & Minerals		Protection		Total Research Cost[2]	
	1990	2030	1990	2030	1990	2030	1990	2030	1990	2030
Low Bound	47	68	9	16	11	14	21	27	109	154
High Bound	57	83	13	19	12	14	23	32	128	188
1 (Constant)	61	60	12	13	12	13	27	26	129	129
2 (Market)	93	120	18	24	18	22	39	50	195	253
3 (Nonmarket)	73	112	20	32	15	24	31	48	161	252
3A (High Wilderness)	73	112	20	32	15	24	31	48	161	252
4 (All Resources)	82	119	19	27	15	23	32	48	172	254
5 (Reduced)	47	47	9	9	9	9	20	20	97	97
6 (Implement Plans)	101	147	22	32	20	28	42	60	215	310
7 (High PNV)	96	134	19	27	17	23	41	51	201	276
8 (1980 RPA)	101	147	22	32	20	28	42	60	215	310
9 (High Productivity)	92	113	17	22	17	20	35	41	185	224

[1]Appendix L shows the detailed outputs and costs for all years.

[2]Includes construction and administration costs. Also, for comparability with the Recommended Program document, Program totals for the High and Low Bound include Washington Office costs and some international forestry costs but these are not included in the resource areas. The 10 alternatives include these costs in the resource areas. For comparison with the alternatives, the Recommended Program with these costs included in the resource areas is shown in appendix L.

Figure 1

Response of RPA Alternatives to Goals

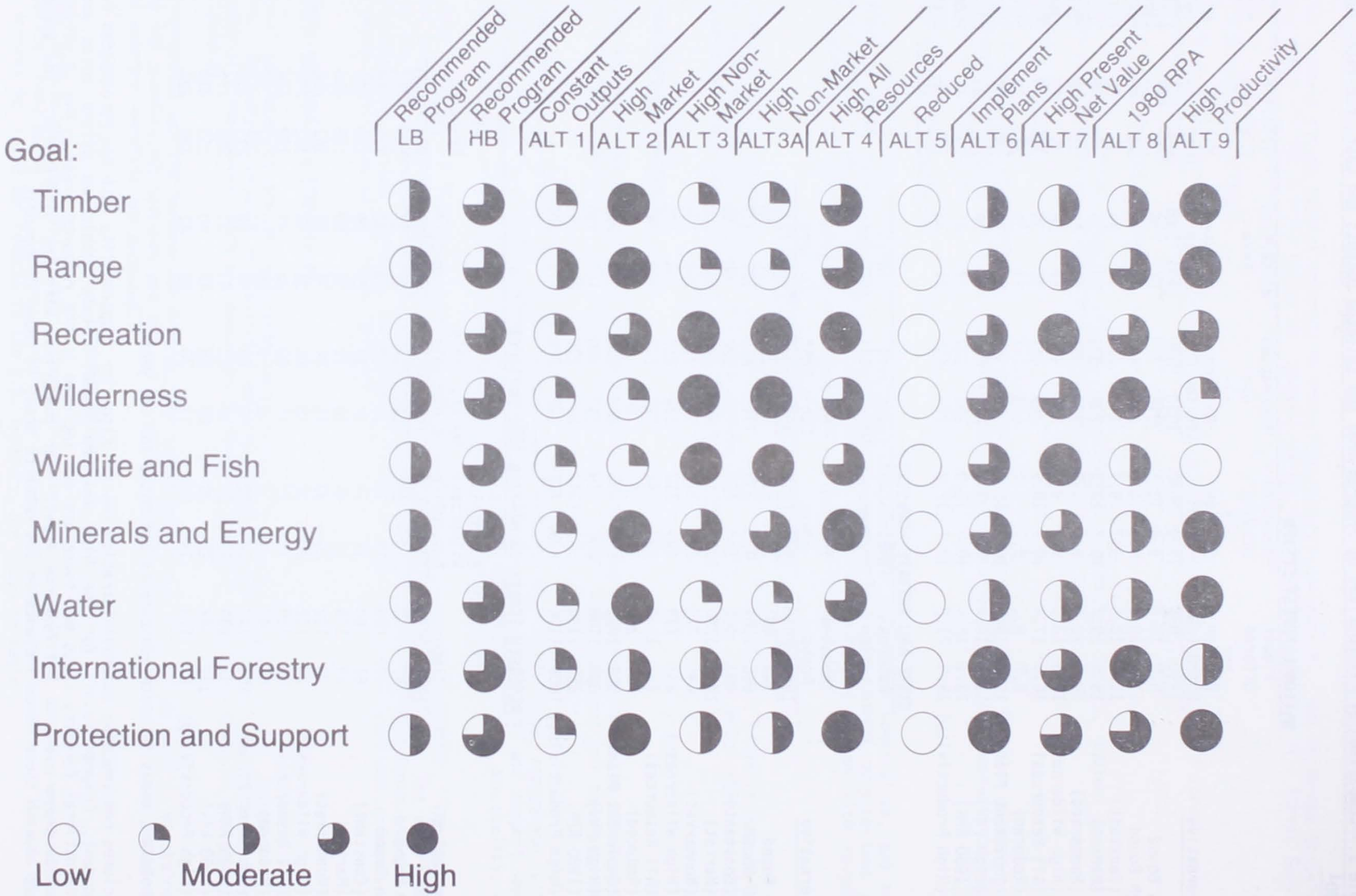


Table 2.--Comparison of Alternatives by Selected Environmental Consequences

Alternative	ECONOMIC EFFECTS IN 1982 DOLLARS Present Net Value (Billion Dollars)	Returns to Treasury (Million $ in 1990)	Returns to Treasury (Million $ in 2030)
Low Bound	77.8	1700	2928
High Bound	103.9	1885	3425
1 (Constant)	67.6	1886	3210
2 (Market)	88.0	1932	3288
3 (Nonmarket)	105.3	1797	3224
3A (High Wilderness)	106.0	1742	3024
4 (All Resources)	98.7	2017	3347
5 (Reduced)	59.5	1591	2679
6 (Implement Plans)	95.0	1963	3569
7 (High PNV)	106.8	1958	3532
8 (1980 RPA)	94.7	1990	3594
9 (High Productivity)	100.6	2006	3378

Alternative	BIOLOGICAL EFFECTS Lands Suitable for Timber Production (Million Acres)	Long-Term Sustained Yield (BBF)	Change in Wildlife and Fish Habitat Carrying Capacity[1]	Threatened and Endangered Species Objectives in the Year 2000[2]
Low Bound	61	17.2	96	+
High Bound	64	17.8	95	+
1 (Constant)	64	16.4	95	o
2 (Market)	71	20.0	90	o
3 (Nonmarket)	54	14.9	110	++
3A (High Wilderness)	54	14.9	110	++
4 (All Resources)	64	19.0	100	+
5 (Reduced)	50	13.4	90	o
6 (Implement Plans)	61	17.5	105	+
7 (High PNV)	60	18.0	105	+
8 (1980 RPA)	61	18.0	105	+
9 (High Productivity)	79	28.3	85	o

Alternative	PHYSICAL EFFECTS SOIL DISTURBED IN YEAR 2000 (THOUSANDS OF ACRES) Beneficial	Potentially Adverse	Visual Quality: Mil.Acres Dominated by Mgmt. Activities (1986 Base = 54.8)
Low Bound	393	388	59.6
High Bound	437	397	59.4
1 (Constant)	302	328	59.8
2 (Market)	491	490	74.2
3 (Nonmarket)	433	347	53.4
3A (High Wilderness)	433	346	53.6
4 (All Resources)	536	453	65.8
5 (Reduced)	174	241	58.7
6 (Implement Plans)	451	412	61.6
7 (High PNV)	426	412	68.6
8 (1980 RPA)	488	413	66.0
9 (High Productivity)	527	530	97.4

[1]Average for species hunted and fished in the year 2000 (1985=100). Individual species may vary from the average.

[2]++ = Exceeds management objectives/recovery schedule; + = Meets management objectives/recovery schedule; o = Does not meet management objectives/recovery schedule. Individual species may vary from the average. Although the management objective/recovery schedule may not be met in the year 2000 in certain alternatives, the objective will eventually be met in all alternatives.

Social Effects

Forest Service activities affect both forest users and the general public. The social areas most likely to be affected are: lifestyles, attitudes, beliefs, values, social organization, population, land use patterns and civil rights.

Generally, the activities in Alternatives 2, 4, 9, and the High Bound in 2030, with their higher market outputs, provide increased employment, forest community stability, population growth of forest communities and opportunities for hiring minorities and women.

Conversely, Alternative 3, with its high nonmarket or amenity outputs, would result in reduced employment in market resource activities and a decline in intensity of land use.

Biological Effects

Biological effects are displayed by: (1) timber productivity, using factors such as long-term sustained yield capacity, lands suitable for timber production, and total timber sale volume; and (2) wildlife and fish carrying capacity; using factors such as change in habitat carrying capacity, threatened and endangered species objectives, and special habitat needs. Four of these biological effects are shown in table 2.

Physical Effects

Physical effects are described by soil productivity and water quality, cultural resources, and visual quality.

Soil Productivity and Water Quality

Estimated acreages affected by key management activities - such as road construction, timber harvest, and range improvements were determined. These soil disturbing activities have either a beneficial or potentially adverse effect on the soil or water resource.

Since neither long-term soil productivity or water quality would be allowed to fall below legal or management standards, the estimates are provided as a relative measure by which to compare alternatives.

Table 2 displays acres of soil disturbance, identified as either beneficial or potentially adverse.

Cultural Resources

Cultural resources would be managed to ensure the protection and conservation of their value on National Forest lands. Once inventory work has identified the potential cultural resource values, they would be protected either through avoidance or through mitigation action such as relocation of projects or creation of buffer areas.

Visual Quality

Visual condition in the year 2000 as compared to the current condition (1986) shows how each of the alternatives and the Recommended Program would affect the viewed environment. A measure of program effects on visual conditions is the acreage dominated by management activities; table 2 displays this acreage.

Chapter 1:

Purpose and Need for Action

INTRODUCTION

Overview

This final Environmental Impact Statement describes and evaluates ten 1985 Resources Planning Act (RPA) Program alternatives and the Recommended Program. It also describes the affected environment, potential environmental consequences, and cost and output levels associated with implementing each alternative and the Recommended Program.

This is the third Program to be developed in response to the Forest and Rangeland Renewable Resources Planning Act of 1974, (P.L. 93-378) as amended. Earlier Programs were developed in 1975 and 1980.

The Forest Service, as the largest forest conservation agency in the United States, provides national leadership in forest conservation policies and programs. In accordance with the Resources Planning Act, the Forest Service role includes "...both a responsibility and an opportunity to be a leader in assuring that the Nation maintains a natural resource conservation posture that will meet the requirements of our people in perpetuity: ...". To that end, the RPA directs the Secretary of Agriculture to periodically assess the status of the Nation's forest and range land resources and recommend a Forest Service program for management and use of these resources. It requires the development of an Assessment every 10 years and a Recommended Program every 5 years. A copy of the Act is in appendix A.

The RPA Assessment describes the Nation's renewable resource situation and projects supplies and demands for these resources. The most recent Assessment was completed in 1979. A supplement to the 1979 Assessment was prepared to account for any significant changes that have occurred since 1979. This Assessment Supplement is available at Forest Service offices nationwide.

The Recommended 1985 RPA Program provides guidance for the management and administration of the National Forest System (NFS), for cooperative State and Private Forestry programs, for Research, and for conduct of other Forest Service activities through 2030. This guidance is based on the 1979 Assessment, as updated in the Assessment Supplement.

Process

A discussion of the planning process used in the development of the 1985 RPA Program can be found in appendix B. While the initial intent was to develop the NFS portion of the 1985 RPA Program based primarily on data from forest land management planning, this was not possible. The schedule for forest land management planning was revised to respond to a need for: (1) development of a revised set of planning regulations, (2) strengthening the economic analysis process, and (3) re-evaluation of the roadless and undeveloped lands. Therefore, the data for the 1985 RPA Program is based on forest land management planning information only to the extent that it was available. For more detail on data base development see appendix D.

The steps taken to develop the 1985 RPA Program parallel the environmental analysis process required by the National Forest Management Act (NFMA, P.L. 94-588) regulations. That parallel is illustrated in the following comparison:

NFMA Process	1985 RPA Program Development Process
Step 1. Identify issues, concerns and opportunities	Identify issues and opportunities, and develop national goals (published in January 1983).
Step 2. Inventory data and information collection.	Develop Regional and national data banks (National Forest System, State and Private Forestry, and Research data).
Step 3. Analyze the current management situation	Develop the 1979 Assessment and the Assessment Supplement.
Step 4. Formulate alternatives.	Formulate RPA Program alternatives.
Step 5. Estimate effects of alternatives.	Estimate output levels and environmental effects.
Step 6. Evaluate alternatives.	Prepare draft Environmental Impact Statement (DEIS).
Step 7. Select preferred alternative.	Submit Recommended Program and final Environmental Impact Statement (FEIS).

Role of the Forest Service

Forest Service cooperation with many Federal, State, and local governments, as well as many individuals and organizations, both public and private, is essential for developing and implementing the Recommended Program. Forest Service activities are divided into three major areas: National Forest System, State and Private Forestry, and Research.

Figure 1.1 shows the boundaries, titles, and numerical designations for Regions of the National Forest System. A separate State and Private Forestry unit, the Northeastern Area, serves an area identical to the NFS Eastern Region (R-9). The rest of the State and Private Forestry programs in the Nation are administered as part of individual Forest Service Regions. Figure 1.2 shows State and Private Forestry Regions and the Northeastern Area. The areas served by the Forest Service Experiment Stations (Research) and the location of the Forest Products Laboratory are shown in figure 1.3.

National Forest System

Managing the country's National Forests and Grasslands is the most visible of Forest Service activities. Everyone who has traveled extensively through the Nation's rural areas, especially in the West, has seen examples of the Forest Service at work. National Forests and Grasslands comprise about 191 million acres, or 12 percent of the total forest and range land in the country. The Forest Service manages this land on a multiple-use sustained-yield basis, ensuring that it yields commercial products such as wood, forage, water, and minerals, as well as amenities such as recreation, wildlife and fish, and wilderness. The Forest Service manages approximately 4 million acres of National Grasslands as a demonstration of sound, practical land use to encourage similar conservation practices on private lands.

State and Private Forestry

Private ownerships, plus areas in State, county, and municipal ownerships, account for approximately 59 percent of the Nation's total forest and range land. Federal forestry programs extend financial and technical assistance to the States and, through them, to private landowners and others. Through these cooperative efforts, State forestry programs are supported and strengthened. The programs include rural forestry assistance on non-Federal forest lands, forestry incentives on nonindustrial private forest lands, forest pest management on all lands, forestry assistance for urban and smaller communities, rural fire prevention and control on non-Federal forest lands and other rural lands, management improvement assistance to State foresters and other State officials, and dissemination of new technology to all landowners.

Research

A comprehensive research program seeks to solve problems related to the protection, management, and wise use of forest and range land through the development of knowledge and technology.

Figure 1.1

National Forest System Regions

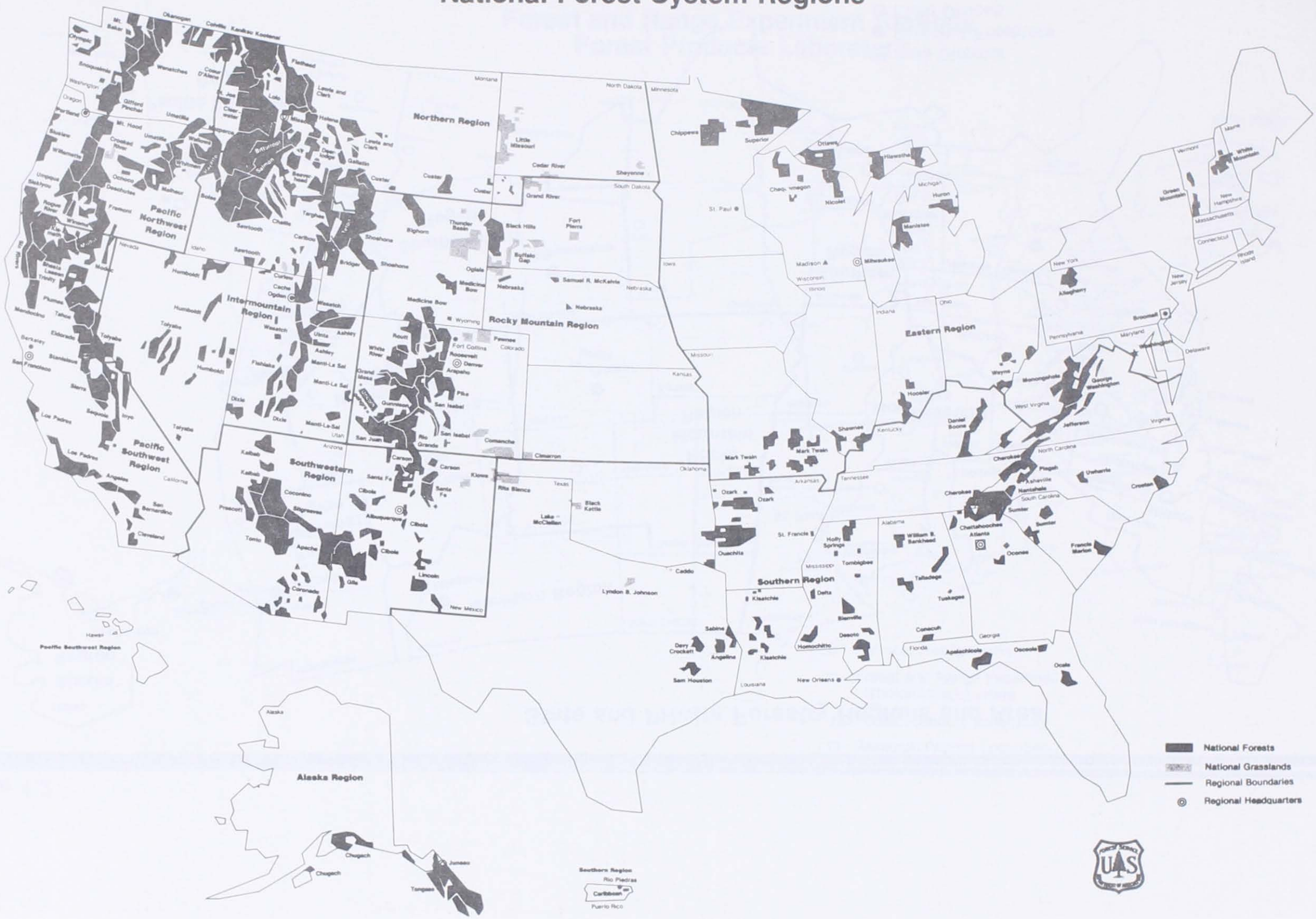


Figure 1.2

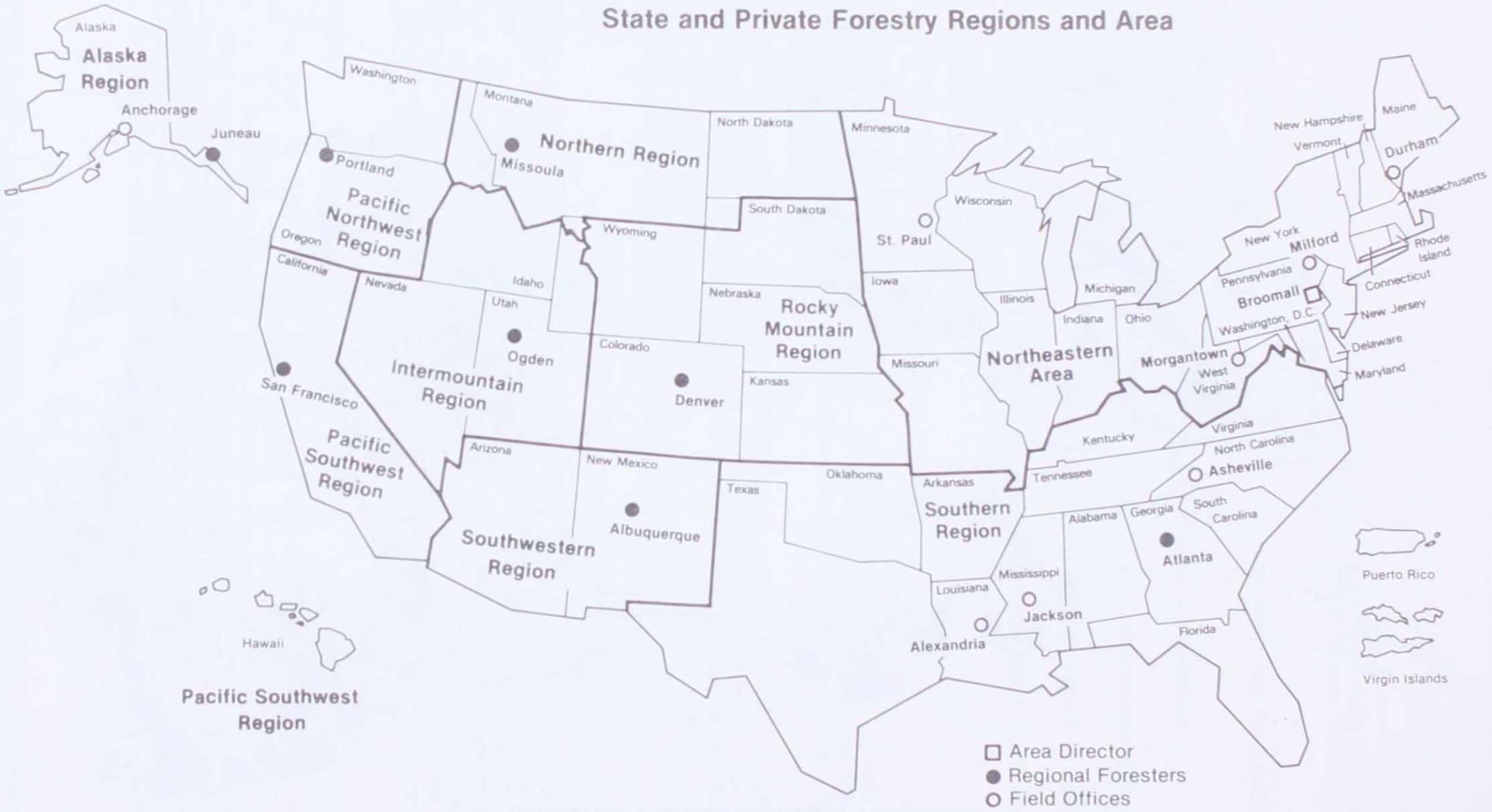
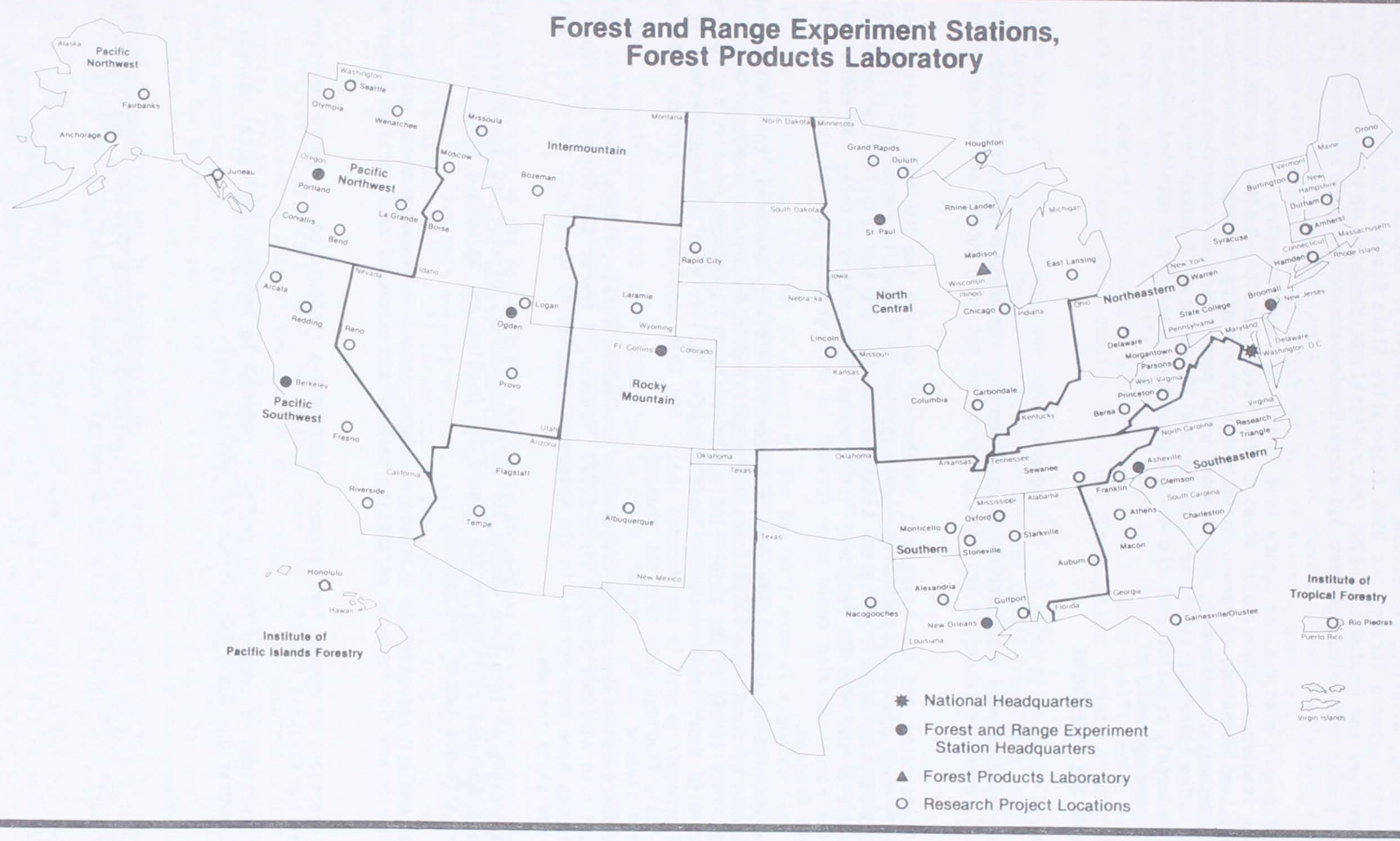

State and Private Forestry Regions and Area
Alaska
Alaska Region
Anchorage
Juneau
Pacific Northwest Region
Portland
Oregon
Washington
Northern Region
Missoula
Montana
North Dakota
Minnesota
Wisconsin
St. Paul
Michigan
Pacific Southwest Region
San Francisco
California
Intermountain Region
Nevada
Utah
Ogden
Idaho
Wyoming
Colorado
Denver
Rocky Mountain Region
Nebraska
South Dakota
Kansas
Iowa
Illinois
Indiana
Ohio
Missouri
Northeastern Area
Morgantown
West Virginia
Pennsylvania
Broomall
New York
Milford
New Hampshire
Vermont
Maine
Durham
Massachusetts
Rhode Island
Connecticut
New Jersey
Delaware
Maryland
Washington, D.C.
Virginia
Kentucky
Tennessee
North Carolina
Asheville
Southwestern Region
Arizona
New Mexico
Albuquerque
Texas
Oklahoma
Arkansas
Southern Region
Louisiana
Alexandria
Mississippi
Jackson
Alabama
Georgia
Atlanta
South Carolina
Florida
Hawaii
Pacific Southwest Region
Puerto Rico
Virgin Islands
Area Director
Regional Foresters
Field Offices

Figure 1.3


Forest and Range Experiment Stations,
Forest Products Laboratory
Pacific Northwest
Alaska
Fairbanks
Anchorage
Juneau
Pacific Northwest
Washington
Seattle
Olympia
Wenatchee
Oregon
Portland
Corvallis
Bend
La Grande
Moscow
Boise
Idaho
Intermountain
Missoula
Montana
Bozeman
Pacific Southwest
Arcata
Redding
Reno
Nevada
Berkeley
Fresno
California
Riverside
Logan
Ogden
Provo
Utah
Rocky Mountain
Laramie
Wyoming
Ft. Collins
Colorado
Flagstaff
Arizona
Tempe
Albuquerque
New Mexico
Rapid City
South Dakota
Nebraska
Lincoln
Kansas
Oklahoma
Texas
North Dakota
Minnesota
Grand Rapids
Duluth
St. Paul
North Central
Houghton
Rhinelander
Michigan
Madison
Wisconsin
Illinois
Chicago
Indiana
East Lansing
Iowa
Missouri
Columbia
Carbondale
Kentucky
Tennessee
Arkansas
Mississippi
Alabama
Monticello
Oxford
Stoneville
Starkville
Southern
Auburn
Alexandria
Nacogooches
Gulfport
New Orleans
Louisiana
Florida
Georgia
Sewanee
Asheville
Franklin
Clemson
South Carolina
Athens
Macon
Charleston
Gainesville/Olustee
Southeastern
North Carolina
Research Triangle
Virginia
Berea
Princeton
West Virginia
Parsons
Morgantown
Delaware
Maryland
Washington D.C.
Pennsylvania
State College
Warren
New York
Syracuse
Broomall
New Jersey
Northeastern
Ohio
Connecticut
Hamden
Rhode Island
Amherst
Massachusetts
Vermont
Burlington
New Hampshire
Durham
Maine
Orono
Honolulu
Hawaii
Institute of
Pacific Islands Forestry
Institute of
Tropical Forestry
Rio Piedras
Puerto Rico
Virgin Islands
National Headquarters
Forest and Range Experiment Station Headquarters
Forest Products Laboratory
Research Project Locations

Eight Forest and Range Experiment Stations and a Forest Products Laboratory carry on research in fields such as silviculture, solid wood and fiber utilization, range, soils, insects, diseases, hydrology, economics, engineering, wildlife, recreation, and urban forestry. Research is planned jointly with the Nation's 61 forestry schools through the USDA Cooperative State Research Service as required by Title XIV of the Agriculture and Food Act of 1981 (P.L. 97-98). Research is directed towards increasing the productivity of public and private forest and range land while maintaining or enhancing environmental quality.

Forest Service Research also has the agency lead in international forestry. However, international forestry activities involve all three major areas of the Forest Service--National Forest System, State and Private Forestry, and Research. Programs in international forestry fit within three broad areas: international trade, technical assistance, and international cooperation and technical exchanges with developed countries. The major activities of international forestry are located in the tropical regions of the world, which largely coincide with the developing countries. For a detailed discussion of international forestry, see appendix J.

MAJOR FINDINGS OF THE ASSESSMENT

Overview

The RPA Program is based upon a comprehensive assessment of the present and anticipated demands for, and the supplies of, renewable resources and minerals from the Nation's public and private forest and range lands.

The 1979 RPA Assessment[1] and the Assessment Supplement[2] analyze the Nation's natural resource situation and identify many opportunities to increase supplies of renewable resources to meet projected demands. The opportunities identified by the Assessment helped set the scope of the national goals which guided development of the 1985 RPA Program. The Program alternatives display the costs and benefits of various ways the Forest Service could move forward to meet growing natural resource demands and the goals of the RPA Program.

In the past, as population and incomes grew and economic activity expanded, the consumption or use of nearly all products of forest and range lands and associated inland waters increased and, in most areas, at rapid rates. This is one of the major findings of the 1979 Assessment, and it has not changed. The 1979 Assessment also found that demand for most products is likely to continue rising in response to population and economic growth in the decades ahead, and that supplies will increase although at slower rates. These basic findings also have not changed.

Most of the resource demand and supply projections for water, forage, outdoor recreation and wilderness, and wildlife and fish have not changed since 1979. However, a few of the demand and supply projections for other resources have been revised in the Assessment Supplement to reflect new data and future expectations. The revisions include:

Lower projections of long-term demand for softwood lumber, plywood and sawtimber--a response to a downward revision in the demand for housing and an upward revision in base prices for softwood lumber and plywood.

A somewhat smaller reduction in softwood roundwood demand--a response to an upward revision in the demand for fuelwood offsetting part of the downward revision for lumber and plywood.

Higher projections of demand for hardwood roundwood--a response to an upward revision in the demand for fuelwood.

Higher projections of demand for minerals--a response to improved analytical methods and changed expectations about the outlook for mineral fuels.

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[1]U.S. Department of Agriculture, Forest Service. An Assessment of the Forest and Range Land Situation in the United States. U.S. Department of Agriculture, Forest Service. Washington, D.C. 352 pp. 1981. This report is a supporting detailed technical document for the 1985 RPA Program.

[2]U.S. Department of Agriculture, Forest Service. "America's Renewable Resources: A Supplement to the 1979 Assessment of the Forest and Range Land Situation in the United States." U.S. Department of Agriculture, Forest Service Washington, D.C. 1984. This report summarizes the major findings of the 1979 Assessment revised in accordance with new data, methodologies, and future expectations.

Water

While the United States has an abundant supply of water, its distribution varies greatly across the Nation. In many areas, the demand for water exceeds supply, and inadequate water supplies in some areas are a limiting factor in resource development and economic growth. Water supply projections show that an increasing demand will continue to impact current uses of existing supplies.

By the year 2000, persons living in 17 major river basins in 11 States in the Southwest and Midwest, and in localized areas in the Northwest and East will suffer serious water supply problems. An estimated 38 river basins in 19 States are already experiencing a reduction of ground water. Projected demands for water will be high in the more arid sections of the Nation, reflecting competition for available supplies among agriculture, energy development, and municipal and industrial users. Demands for water for nonconsumptive purposes related to wildlife and fish resources, hydroelectric development, recreation, navigation, and maintenance of wetlands will also increase. While water quality needs vary depending on use, demand to maintain or improve water quality and allow for a greater variety of uses is expected to increase.

About 175 million acres of land scattered throughout the Nation are flood prone, with 21,000 communities subject to some degree of flooding. Demand for better control of runoff from flood source areas and for reduction of downstream flooding will increase as property values rise and improvements are installed in flood-prone areas.

Minerals

Supplies of some important mineral and energy sources are increasingly difficult to obtain. A significant share of our supplies of energy and strategic materials is produced in other countries, and import dependency is increasing. Availability depends on the international political climate and the world trade situation.

Despite the lack of reserves for a number of minerals, the Nation's mineral resource base is extensive. Considerable untapped mineral and energy resources underlie National Forest System lands. In many instances, these untapped resources are in remote areas where development has been impeded by debate over whether these lands should be designated as wilderness, or because of difficult terrain, or climatic conditions. Growing demands and higher mineral and energy prices will make mining in remote areas more attractive.

Demand for mineral commodities is not very responsive to price changes. Also, because mineral processing and related technologies are capital intensive, it takes relatively long periods of high prices to prompt the development and application of new, conservation-oriented technologies.

Range

Demand for livestock grazing in the United States will grow 40 percent by the year 2030, rising from 213 million to 280 million animal unit months. Substantial increases in demands for wildlife forage and habitat and for other uses, such as outdoor recreation, are also expected on the Nation's rangelands. Nearly all of the demand for livestock grazing on rangelands and forests will occur in the contiguous 48 States. More than half of the range in all ownerships in the contiguous 48 States is producing at less than 40 percent of its natural potential productivity. Subsequent analyses have indicated that demand for livestock forage could be lower than the Assessment projection.

Recreation

In 1980, outdoor recreation on Federal lands amounted to more than 460 million recreation visitor days (RVDs). More than 43 percent or 233 million RVDs of this recreation use occurred within the Nation's 155 National Forests. Projections based on expected changes in population, personal income, geographic distribution, age structure, workweek, and work schedules indicate continued increases in demand for outdoor recreation opportunities on forest and range lands. The Nation's expanding population is increasing its demands for commercial and recreation uses of wildlife and fish. The most significant increases in recreation use are occurring in the Sunbelt and West where population growth is most rapid.

Most forest and range lands are located some distance from our Nation's most populated areas. More than 50 percent of the population lives in the North Central and Northeastern Regions, which have only 10.5 percent of the Nation's forest and range land acreage, 91 percent of which is privately owned. In contrast, the Pacific Coast region has 13.6 percent of the population and 33.4 percent of the forest and range lands, with only 12 percent of these 520 million acres in private ownership. Private lands will continue to be an important source of recreation opportunities, especially in the Northeast, South, and Midwest where there is less public land. Where public use of private forest and range lands for recreation may be limited, demands will tend to be concentrated on public lands.

Wilderness

As of May 1, 1986, Federal lands contain 88.5 million acres in 468 wildernesses. There are 32 million acres and 329 wildernesses in the National Forest System. In fiscal year 1980, the National Forest Wilderness System received 8.4 million recreation visitor days of use, or 3.6 per- cent of all National Forest System recreation use. Reported use more than doubled from 1965 to 1980. Only a small part of this increase is due to the addition of new wildernesses since 1965. The 88 wilder- nesses in existence in 1965 accounted for 89 percent of the total National Forest Wilderness System use in 1980. The use of those 88 areas grew 83 percent over the 15-year period.

Demand for use of wilderness is projected to grow each year for the next several decades. Current use levels are close to the desirable upper limits for some established wildernesses. The concentration and distribution of use must be managed to protect unmodified natural conditions and to maintain opportunities for solitude. Carrying capacity limits are projected to be reached in 30 percent of the National Forest wildernesses by the year 2000 regardless of investments.

Timber

Timber consumption in the United States increased from about 11 billion cubic feet in the late 1950s to nearly 14 billion in the late 1970s. Data for the early 1980s show that annual domestic harvests are about 9.5 billion cubic feet of softwood roundwood from a total inventory of about 456 billion cubic feet and 5.3 billion cubic feet of hardwood roundwood from an inventory of 255 billion cubic feet. Table 1.1 shows percent of softwood and hardwood inventory by ownership as compared with percent of total harvest and percent of commercial timberland.

Table 1.1--Comparison of Roundwood Inventory, Harvest, and Commercial Timberland Area, by Ownership

Ownership	PERCENT OF INVENTORY			PERCENT OF HARVEST			PERCENT OF COMMERCIAL TIMBERLAND AREA
	All Species	Soft- wood	Hard- wood	All Species	Soft- wood	Hard- wood	
National Forest System	32	46	8	15	20	3	18
Other Public	11	11	10	7	8	6	10
Forest Industry	15	16	12	30	36	14	14
Farmer and Other Private	42	27	70	48	36	77	58

In response to the surge in housing needs resulting from the baby boom of the 1950s, and despite recent low levels of construction, the analyses prepared for the 1979 Assessment and Assessment Supplement indicate that demand for timber is likely to rise in the 1980s. Long-run projections in the Assessment Supplement, based on expected increases in population, economic activity and a continuation of the price trends over the past 30 years, show that demands will continue to grow to a level of 25.8 billion cubic feet by the year 2030--slightly less than the 1979 Assessment projection. This is about 74 percent more than the current domestic harvest level.

The supplies of timber that will be available to meet these demands, assuming a continuation of recent trends in investments in forest management, show slower increases. This will result in rapid increases in the relative prices (net of general inflation or deflation) of timber and timber products as the marketplace brings about an equilibrium between demands and supplies. The price system may also encourage additional investment above trend levels that could dampen price increases expected with recent management trends.

Wildlife and Fish

The U.S. Environmental Protection Agency reports that up to 2 million acres of fish and wildlife habitat will be lost annually between now and the year 2000. The implications for wildlife and fish are serious: nearly half of the acreage of wetlands that once existed in the lower 48 States is gone, and 20 million of the 25 million acres of hardwood bottomland along the lower Mississippi have been significantly impacted. This places a heavier responsibility on public lands that retain wetland qualities. Salmon, steelhead, waterfowl, and those species dependent upon mature timber, wetlands, and riparian areas will continue to decline because there will be less of this habitat nationwide.

Approximately 274 vertebrate species in the United States are on the Federal list as actually or potentially in danger of extinction. Unless specific management strategies are implemented, the list of threatened and endangered species will increase during the next 20 years.

RESULTS OF SCOPING

National Goals and Opportunities

The 1985 RPA Program is organized around nine opportunity areas and their goals. The goals are broad statements that describe a desired future resource situation for the Nation. The goals reflect leadership responsibilities of the Forest Service but recognize the role of other agencies and groups.

The following principles are common to all goals. Elements of these statements may appear in some of the goals themselves:

Protection of the long-term productivity of the soil resource.

Retention of environmental quality.

Sustained yield of renewable resources for present and future use.

Integrated management of surface and subsurface resources.

Use of the best economic opportunities for management and use of the various natural resources.

Coordination with other Federal agencies, State and local governments, and private landowners.

Provision for the health and safety of the public using the National Forest lands.

Water Opportunity Area

GOAL

PROVIDE FOR FAVORABLE CONDITIONS OF WATERFLOW, HELP PROVIDE FOR CONSUMPTIVE AND NONCONSUMPTIVE USES OF WATER, AND HELP MEET LONG-TERM WATER QUALITY NEEDS THROUGH MANAGEMENT, ASSISTANCE, AND TECHNOLOGY. INCREASE WATER YIELDS WHERE COST EFFECTIVE IN WATER-SHORT AREAS, CONSISTENT WITH OTHER RESOURCE USES AND VALUES. REDUCE FLOOD LOSSES WHERE ECONOMICALLY FEASIBLE.

OPPORTUNITIES

This goal establishes direction for the management of forest and range lands that will help contribute to current and future water supplies and protect water quality. Long-term, as used in this goal, is a modifier intended to preclude overly strict interpretation of the goal.

Essentially all activities, whether timber harvesting, construction and use of hiking trails, or establishing wildlife food plots involve some disturbance and have some impact on water quality. This goal does not preclude temporary, but reversible, adverse impacts on water quality. Opportunities include:

Striking a balance between the public's concern for resource production and environmental protection. This would include keeping certain waters of exceptional quality from deteriorating and reducing flood hazards where cost effective.

Carrying out soil and water resource improvement activities on lands with declining watershed conditions.

Providing technical and financial assistance to the States and emphasizing research development and application to increase water yields.

Modifying timber harvesting to increase water yield in water-short areas.

Increasing water supplies, where they are a limiting factor, to allow for industrial, municipal, and energy development.

Protecting the long-term productivity of the land.

Reducing flood hazards.

Increasing research to better predict soil erosion and sediment yield, to improve snow management practices, and to develop improved information on nutrient cycling.

Minerals and Energy Opportunity Area

GOAL

PROVIDE FOR MINERAL PROSPECTING AND EXPLORATION, AND RESPOND TO PROPOSALS FOR MINERALS DEVELOPMENT, IN CONCERT WITH OTHER RESOURCE USES AND VALUES, AND PROVIDE TECHNOLOGY FOR RECLAMATION OF DISTURBED LANDS. EMPHASIZE ENERGY MINERALS AND MINERALS OF STRATEGIC IMPORTANCE.

OPPORTUNITIES

Opportunities for responding to the minerals and energy goal include:

Improving access to lands for efficient exploration and evaluation of the mineral resources.

Streamlining leasing and permitting processes to reduce certain financial and market risks and to enhance efficient exploration and development of the mineral resources.

Increasing knowledge through research to assure rehabilitation of disturbed sites.

Range Opportunity Area

GOAL

PROVIDE FORAGE TO PROMOTE THE ECONOMIC STABILITY OF DEPENDENT LIVESTOCK PRODUCERS AND RURAL COMMUNITIES BY MAINTAINING THE CURRENT LEVEL OF FORAGE PRODUCTION ON NATIONAL FOREST SYSTEM LANDS, AND EXPANDING THIS LEVEL OF PRODUCTION WHERE COST EFFECTIVE. DEVELOP AND APPLY TECHNOLOGY, WHERE COST EFFECTIVE, TO IMPROVE RANGE CONDITIONS AND TO COORDINATE LIVESTOCK AND OTHER MULTIPLE USES OF RANGELAND.

OPPORTUNITIES

The opportunities to increase forage production and to improve the condition of forest and range lands for grazing include:

Rehabilitating rangeland where cost effective by seeding palatable grasses and legumes and controlling poisonous plants, noxious weeds, and other undesirable plants and shrubs.

Increasing the utilization of forage lands by using improved grazing systems and livestock management practices.

Constructing livestock improvements, such as fences and water developments, where cost-effective.

Reducing forage losses by controlling wildfires, and range insects and diseases.

Increasing rangeland productivity through research methods such as: forage plant improvement, integration of forage management with other land management strategies, and use of fire for improving rangeland growing conditions.

Recreation Opportunity Area

GOAL

PROVIDE OUTDOOR RECREATION OPPORTUNITIES AND EXPERIENCES BY PROVIDING ACCESS, SERVICES, AND FACILITIES, WHERE COST EFFECTIVE, THAT ARE NECESSARY TO MEET THE NATIONAL FOREST SYSTEM SHARE OF THE NATION'S DEMAND FOR OUTDOOR RECREATION, CONSISTENT WITH OTHER RESOURCE USES AND VALUES. PROVIDE TECHNOLOGY TO IMPROVE AND EXTEND RECREATION OPPORTUNITIES. MOVE TOWARD RECREATION USERS ASSUMING A GREATER SHARE OF THE COST OF PROVIDING RECREATION OPPORTUNITIES.

OPPORTUNITIES

Most of the projected increases in demands for outdoor recreation on forest and range lands and inland water can be met. There are major opportunities in all parts of the country which include:

Rehabilitating deteriorating sites and adequately maintaining existing facilities.

Constructing additional facilities such as trails, campgrounds, picnic areas, and boat ramps.

Improving access to forest and range land and inland water suitable for outdoor recreation, especially near urban areas.

Improving the coordination and integration of outdoor recreation uses with other uses.

Providing recreation services and facilities on public lands through the private sector where there is a potential for profit.

Developing technology through research in recreation and urban forestry to integrate recreation management with other multiple-use objectives, to predict demand, to measure social benefits, to enhance visual quality, and to increase amenity values.

Wilderness Opportunity Area

GOAL

MANAGE NATIONAL FOREST WILDERNESS AND PROVIDE RESEARCH TO ENHANCE THE QUALITY OF WILDERNESS EXPERIENCES AND MEET OTHER PURPOSES OF THE WILDERNESS ACT. RECOMMEND ADJUSTMENTS WHERE APPROPRIATE TO THE NATIONAL WILDERNESS PRESERVATION SYSTEM BASED ON THE RELATIVE VALUES INVOLVED IN A WAY WHICH COMPLETES THE NATIONAL FOREST PORTION OF THAT SYSTEM TO BEST MEET THE NEEDS OF THE AMERICAN PEOPLE.

OPPORTUNITIES

The projected increases in demand for both quantity and quality of wilderness can be met. The major opportunities are:

Completing the review of all suitable Federal lands and recommending to the Congress those units that warrant designation.

Restoring primitive quality of lands by removal of incompatible uses and improvements.

Maintaining current air quality values and improving visibility within designated areas.

Improving management and information techniques for shifting more recreation demands to underutilized wilderness and nonwilderness areas and facilities.

Increasing research to improve wilderness visitor management, to reduce ecological impacts of visitor use, and to determine effects of air pollution on air quality values.

Timber Opportunity Area

GOAL

MEET GROWING DOMESTIC AND EXPORT DEMANDS FOR WOOD PRODUCTS BY USING ECONOMIC OPPORTUNITIES FOR MANAGEMENT AND ASSISTANCE, AND BY DEVELOPMENT OF NEW TECHNOLOGY TO INCREASE AND EXTEND TIMBER SUPPLIES WHILE PROTECTING THE ENVIRONMENT AND PROVIDING OPPORTUNITIES FOR WILDLIFE, RECREATION, AND OTHER MULTIPLE USES OF FOREST LANDS.

OPPORTUNITIES

There are three major ways to respond to rising demands for timber: (1) extending supplies through improved utilization, (2) increasing net annual growth, and (3) increasing harvests from the existing timber resource. More specifically:

(1) Timber supplies can be extended by--

Increasing the useful life of wood products by preservative treatments, improving designs of new structures; and renovating and maintaining existing structures rather than replacing them.

Improving efficiency in wood products processing, construction, and manufacturing; and utilizing unused wood materials such as logging residues, treetops and limbs, rough, rotten, and salvageable dead trees, and trees in urban areas and in fence rows.

(2) Net annual timber growth can be increased by--

Regenerating nonstocked and poorly stocked commercial timberlands, regenerating mature stands, converting existing stands to more desired species and, in some cases, converting nonforest lands to forest land.

Developing and applying intensive timber management practices such as spacing control, fertilization, use of genetically improved trees, and vegetation management.

Using management control and harvesting practices to reduce losses caused by natural mortality, undesirable vegetation, wildfire, insects, diseases, and poor logging practices.

(3) Harvests from the existing timber resource can be increased by:

Accelerating harvests on National Forests in Washington, Oregon, northern Idaho, northern California and western Montana that have large inventories of old-growth softwood timber.

Increasing softwood and hardwood timber harvests on forests in the East.

In these latter cases, sustaining increased harvests on the National Forests in the West and on the forest lands in the East beyond a few decades will require large investments in more intensive management to increase net annual timber growth. This will include providing technical and financial assistance to private landowners.

Wildlife and Fish Opportunity Area

GOAL

ASSURE A DIVERSE, WELL-DISTRIBUTED PATTERN OF HABITATS FOR VIABLE POPULATIONS OF WILDLIFE AND FISH SPECIES IN COOPERATION WITH STATES AND OTHER AGENCIES. PROVIDE TECHNOLOGY AND MANAGE HABITAT TO HELP RECOVER THREATENED AND ENDANGERED SPECIES, AND TO INCREASE THE PRODUCTIVITY FOR NATIVE GAME AND NONGAME SPECIES CONSISTENT WITH OTHER RESOURCE USES, VALUES, AND USER DEMANDS.

OPPORTUNITIES

There are some general opportunities to respond to all of the diverse demands on the wildlife and fish resource. These include:

Expanding programs to improve wildlife and fish habitats by increasing food supplies and suitable cover, improving water quality and availability, and improving the distribution of habitat.

Integrating, more fully, wildlife and fish objectives in the management of other forest and range land renewable resources.

Providing better access by constructing trails, boat landings, and obtaining rights-of-way where the wildlife and fish resources are underutilized.

Controlling land and water pollution, especially the use of pesticides that adversely affect wildlife and fish species.

Expanding wetland nesting habitats through fee purchase of key tracts and easements in the United States, and preserving and enhancing migration and wintering habitats.

Increasing the reintroduction of species that have been displaced in areas where suitable habitats exist or are developed.

Increasing efforts to define, protect, improve, and augment essential habitats of endangered and threatened species and the habitat of other important species adversely affected by changes in management or use.

Fuller use of anadromous fish opportunities.

Removing barriers to fish migration.

Increasing research efforts to improve or develop new technology to identify species habitat requirements and to improve wildlife and fish habitat.

Protection and Support Opportunity Area

GOAL

COMMENSURATE WITH NATURAL RESOURCE GOALS FOR FOREST AND RANGE LANDS, PLAN AND EXECUTE COST EFFECTIVE PROTECTION AND PROGRAM SUPPORT IN FACILITIES, FIRE, PESTS, LANDS, AND OTHER SUPPORTING ACTIVITIES.

EMPHASIZE PREVENTION, AND WHERE APPROPRIATE, MITIGATION OF RESOURCE LOSS AND DAMAGE. COOPERATE WITH LOCAL, STATE, OTHER FEDERAL AGENCIES, AND PRIVATE LANDOWNERS IN RESEARCH, FOREST PEST MANAGEMENT, WILDLAND FIRE MANAGEMENT, AND OTHER RESOURCE PROTECTION PROGRAMS. PARTICIPATE IN ECONOMICALLY PRODUCTIVE HUMAN RESOURCE PROGRAMS THAT SUPPORT COMMUNITY DEVELOPMENT AND STABILITY.

OPPORTUNITIES

Opportunities to respond to the direction of this goal are described below:

Providing cost-effective fire management programs on National Forest System lands, including use of prescribed fire.

Providing cost-effective fire protection on private and other public lands through financial and technical assistance to State and local governments, including rural wildfire training and improved fire response capabilities.

Providing technical assistance to reduce fire hazards and risks at the urban-wildland fringe through education, fuel modification, hazard reduction, and vegetation management including effective use of prescribed fire.

Analyzing ways to share services within the Forest Service and with other agencies.

Increasing knowledge of acid deposition effects on forest ecosystems through research.

Reducing adverse effects of air pollution on forest and range resources by monitoring current conditions and trends and determining source-receptor relationships.

Providing technical assistance, training, and new technology to Federal, State, and private cooperators for implementing integrated pest management programs.

Implementing an integrated pest management program on National Forest System lands to protect, maintain, and enhance the production and quality of forest and range land resources.

Improving and maintaining soil productivity through application of soil management practices, and inventory and analysis of the soil resource.

Reducing soil erosion by timely revegetation of disturbed areas and application of improved engineering and land management technology.

Reducing air pollution from forest and range activities through development, application and timing of improved management practices and, through research, improving predictive capabilities and understanding of air pollution and its effects on forest and range resources.

Managing prescribed fire to reduce smoke production impacts on air quality.

Maintaining a landownership adjustment program that optimizes ownership patterns, reduces administrative costs, facilitates resource development, prevents trespass, and resolves management needs with adjacent owners.

Administering special-use permits, including FERC licenses, to ensure compliance with permit terms and to obtain a fair return on non-Federal uses of NFS lands.

Reducing trespass, promoting full resource management, preventing loss of revenue, and promoting good neighbor relations by marking and maintaining property boundaries.

Maintaining records on landownership, special-use permits, rights-of-way and other real estate status records.

Inventorying, protecting, and interpreting appropriate cultural resources.

Protecting health and safety of visitors through cooperative law enforcement, water and sanitation improvements, road maintenance, public safety, and education programs.

Incorporating and monitoring protection and support activities through National Forest and State forest planning efforts.

Aiding States in the identification of prime forest lands for retention and improved long-term management.

Encouraging retention of private forest and range lands for forest and agricultural use through involvement in local and State land use planning, recommendation of tax policy revisions, and education in the commercial potential of these lands.

Maintaining Forest Service facilities needed to protect and support management activities.

Developing new technology to improve understanding of basic biology, ecology and dynamics of insect populations; creating new and improving insect suppression techniques; and reducing disease-caused mortality of tree seedlings.

Implementing vegetation management techniques to improve water yields, reduce fire hazards, and improve watershed conditions.

International Forestry Opportunity Area

GOAL

EXERCISE LEADERSHIP AND COOPERATION WITH APPROPRIATE UNITED STATES AGENCIES, OTHER NATIONS, AND INTERNATIONAL ORGANIZATIONS TOWARD ASSISTING OTHER NATIONS IN IMPROVING MANAGEMENT OF THEIR FOREST AND RANGE LAND RESOURCES SO AS TO MEET THEIR OWN NEEDS, PROTECT THE GLOBAL ENVIRONMENT, AND AVOID EXTINCTION OF SPECIES. IDENTIFY POTENTIAL OPPORTUNITIES FOR INTERNATIONAL TRADE IN FOREST PRODUCTS. ENGAGE IN INTERCHANGE OF RESEARCH AND TECHNICAL ASSISTANCE WITH OTHER NATIONS.

OPPORTUNITIES

A large amount of technical and managerial knowledge is now available to increase the production of wood and forage. Through domestic and international programs of cooperative research and development, the United States can help deliver the scientific and technological means to increase and/or conserve timber and range resources as well as protect soils, watershed, and endangered species, especially in tropical forested regions of the world. Opportunities exist to transfer this knowledge to the people who manage and use the land including:

Training foreign nationals, both at field locations in the United States and at worksites in other countries.

Mobilizing specialists from within the Forest Service and from collaborating Federal and State agencies, universities, forest and range industries, and allied organizations to provide advisory services and technical assistance either on a short-term basis or on a long-term resident assignment.

Issues

The goals describe the Forest Service role in responding to the Nation's long-term renewable resources situation. In developing the 1985 RPA Program, the Forest Service has also addressed significant national issues that may have short-term impacts on reaching these long-term goals. The issues were identified in the scoping process required by NEPA. More than 400 issues were identified from numerous sources. Application of a screening process plus consolidation and further definition of the issues resulted in nine significant issues. For information on the sources of the 400 issues, the screening process used, and the circumstances surrounding the issues, see appendix C.

Following is a list of the nine significant issues and a brief discussion of how the alternatives and the Recommended Program can be compared based upon their response to the issues:

Program Issue	Program Response
1. How can National Forests contributes to meeting increased demand for mineral and energy development?	1. The alternatives reflect the energy and nonenergy minerals produced. The National Forest contribution to supplies in response to increased demand can be estimated for these broad categories by comparing program outputs with demand. (Reference chapter 2, Minerals.)
2. What are the implications when Federal rangeland is producing at less than biological potential?	2. Grazing allotments under various levels of management with resulting forage outputs are compared and evaluated using economic, social, and physical/biological impact analyses. (Reference chapter 2, Range; and appendix G, Range Benchmark.)

Program Issue	Program Response
3. Can the supply of outdoor recreation opportunities from public forest and range lands be expanded in response to projected demand?	3. Quantity and quality of recreation use are compared using estimated values. The narrative compares the physical and environmental differences in recreation experience. (Reference chapter 2, Recreation.)
4. How much National Forest land should be recommended for inclusion in the National Wilderness Preservation System?	4. Wilderness acreages are compared so that tradeoffs can be evaluated at the National level. Specific wilderness recommendations will be made as a result of analyses in forest planning. (Reference chapter 2, Wilderness.)
5. What are the local and national implications of implementing departures from nondeclining yield on National Forests? Also, what are the values and costs of retaining significant volumes of old-growth timber on the National Forests?	5. Various levels of departures are considered. Comparison can be accomplished by analyzing the output, present net value, social impacts and environmental effects. Values and costs are reflected in the analyses above. (Reference chapter 2, Departures.)
6. What are the implications of commercial forest land producing at less than potential?	6. Comparisons of timber output are examined using economic, social and physical/biological impact analysis. (Reference chapter 2, Timber; and appendix G, Timber Benchmark.)
7. What are the benefits from improving utilization of current wood supplies to extend the timber resources?	7. Benefits of improved utilization of wood are estimated as part of the Research and State and Private Forestry evaluations. The effect on wood product outputs from varying levels of research investment is estimated. Wood product value improvements influenced by technology transferred by State and private programs are also estimated. (Reference chapter 2, Research and State and Private Forestry: and appendix I.)
8. Relative to effects that result from other uses, what are the implications of changes in fish and wildlife habitat?	8. Wildlife and fish habitat capability is analyzed and compared. The outputs are measured in Wildlife and Fish User Days, and through impacts on potential numbers of key indicator species, and pounds of commercial fish harvest. (Reference chapter 2, Wildlife and Fish.)
9. How will the implications from production of nonmarket forest and range resources be incorporated, particularly in terms of economic analyses?	9. Economic analyses on nonmarket resource outputs, (recreation, wilderness, wildlife and fish) are completed by using estimated market values as compared with costs. In addition, environmental effects are measured and compared. (Reference chapter 2, Economics.)

Chapter 2:

Program Alternatives and Their Comparison

INTRODUCTION

Chapter 2 displays and compares 10 alternatives and the 1985 Recommended Program. The alternatives represent different mixes of resource emphasis. Consequently, progress toward achievement of specific national goals varies by alternative.

This chapter is the focal point of the final Environmental Impact Statement (FEIS). It outlines the process used to develop the alternatives; describes the alternatives that were considered but eliminated from detailed study; describes the alternatives considered, including the alternative of no action; and provides comparative data.

DEVELOPMENT OF THE ALTERNATIVES

The RPA alternatives are based on data and information developed in National Forest System (NFS) planning, Statewide forest resource planning, and extensive field level input for research planning. The international forestry portion of the alternatives was derived from a special study.[1] Appendices D, I, and J provide a fuller explanation of data development.

Each alternative is a complete option that presents a different combination of management activities, technical assistance, and research which produces varying levels of goods and services. The following guidelines were used to develop alternatives:

Each alternative should be achievable.

A no action alternative should be formulated that shows the most likely conditions expected to exist in the future if current direction from the 1980 RPA continues.

Alternatives should reflect a broad range of resource outputs and investment levels.

Each alternative should represent the most cost-efficient combination of management and other activities that meets the objectives established for the alternative.

Each national goal and issue should be addressed in one or more alternatives.

A reasonable number of alternatives should be examined. Those that duplicate costs and resource emphases should be eliminated from further consideration.

Alternatives should provide a realistic and achievable transition from current program and budget levels.

Alternatives should reflect rational, professional judgment.

Alternatives should consider policies regarding increased productivity.

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[1]Doolittle, Warren T. International Forestry Program for USDA Forest Service. Society of American Foresters. Bethesda, MD. Unpublished Report. 1983.

Alternatives should be realistic in terms of work force and contracting capabilities.

Alternatives should be sensitive to the need for key investments that are the basis for future outputs. Examples include habitat improvement, timber stand improvement, and road construction.

Alternatives should be based on sound economic, social, and biological management principles. Special attention to these principles is required when considering the need for new capital investments versus operation and maintenance costs.

Alternatives should consider the capability of cooperators to finance their share of programs.

Alternatives should recognize historical budget trends, but specific programs can differ in rate of increase or decrease.

At a minimum, resource objectives should comply with legal requirements.

All alternatives should be designed to prevent significant impairment of the land's productivity.

NEW LEGISLATION

After release of the DEIS in January 1984, approximately 6.5 million acres of wilderness were designated by the 98th Congress. The original nine alternatives were adjusted to reflect this wilderness legislation.

The effects of the Federal Timber Contract Payment Modification Act (P.L. 98-478) are considered in the Recommended Program only. These effects could be incorporated into other alternatives if the timber volumes were constrained between 1986 and 1991.

Conservation provisions of the Food Security Act of 1985 direct that, to the extent practicable, not less than one-eighth of the highly erodable cropland converted to permanent vegetation be planted to trees. It is estimated that at least 5 million acres of trees will be planted during the 1986-90 period, mostly in the Southeast. The additional timber production opportunities provided by this Program substantially increase chances of reaching the long term timber goal.

Recreation fee legislation is being proposed in the Recommended Program. The purpose of this legislation is to offset a portion of the recreation and wilderness costs. Another type of recreation fee legislation is considered in Alternative 9 which would offset a greater share of recreation costs.

ALTERNATIVES CONSIDERED AND ELIMINATED FROM DETAILED STUDY

Some alternatives were initially considered but eliminated from further analyses. These alternatives were generally of two types: alternatives based on several budget increments, and alternatives based on existing functional and multiple-use plans. A brief description and the rationale for their elimination follows.

Budget Increments

Budget increments were initially considered as a means of determining alternative levels of output for the 1985 RPA Recommended Program. This budget increment approach did not provide the opportunity to reflect the resource mixes based on National Forest land management plans or Statewide forest resource plans. It made budget the primary determining factor for alternatives, rather than responding to needs in the Assessment. Finally, it did not provide for design of alternatives that directly addressed the national goals.

Existing Direction Alternative

An existing direction or multiple-use alternative was examined which provided the same amounts of goods and services if existing management plans were extended into the future. This alternative would have been based on existing National Forest multiple-use plans, timber-management plans, and a number of other functional resource plans. This alternative was eliminated from further consideration in lieu of the integrated plans currently being developed for National Forests.

ALTERNATIVES CONSIDERED IN DETAIL

Originally, in the draft Environmental Impact Statement (DEIS), nine alternatives were developed for public review and response. These alternatives, represented different combinations of resource

management emphases and produced different levels of activities, goals, services, and research in response to the needs and opportunities derived from the 1979 Assessment, the Assessment Supplement, and the stated national goals. Each alternative represented an integrated mix of resource outputs, new technology, and planned technology transfer.

Since the release of the DEIS in January 1984 over 1800 comments have been received. These were reviewed and the results used, along with further evaluations and analysis, to develop two more alternatives. One alternative, labeled 3A, has a high wilderness emphasis which includes up to 52 million acres of wilderness. The other alternative, the Recommended Program, is an amalgam of the various alternatives with emphasis placed on designing a Program which could earn a positive monetary return from the NFS activities, while maintaining net public benefits and meeting environmental and legal requirements. The physical, biological, social, and economic effects of each alternative are discussed in chapter 4.

In this section, each of the ten alternatives and the Recommended Program is briefly described for NFS, State and Private Forestry (S&PF), and Research with pertinent displays of major activities, outputs, and costs. Appendix L provides a more detailed comparison of the national alternatives. Summaries of Region, Station, and the Area activities, outputs, and costs which make up the national alternatives are displayed in appendix H.

The S&PF activities are closely integrated with Forest Service Research and also with the activities needed to manage the National Forests. S&PF provides the link in the transfer of technology from researchers to consumers. Cooperative forestry programs have direct impacts on the protection and management of NFS lands that are interspersed with private or other non-Federal ownerships. In some areas, cooperative programs in fire and forest pest management are essential to protection of the National Forests and other Federal lands.

Research is closely coordinated with related activities for the management and protection of NFS lands, programs of other Federal agencies, cooperative forestry assistance programs with States, university research efforts, and with the needs of private forest owners and industry. New technology and information are developed for specific needs of the National Forest managers. A survey and analysis of NFS research needs indicated a large proportion of the research planned for each alternative was needed to support land management objectives in addition to meeting State and private forestry needs. A concerted effort was made to develop research initiatives that would support the needs of NFS and S&PF.

International forestry activities, described within the Research program, also include NFS and S&PF activities. This Forest Service-wide program includes three types of activities: (1) international trade, (2) technical assistance, and (3) international cooperation and technical exchange. Many of the international forestry activities overlap with domestic programs and are funded from these programs as well as from other Federal departments and agencies. Research activities currently comprise the largest share of the Forest Service's international forestry activities, but NFS and S&PF gradually expand their international forestry work during the planning period.

Recommended Program

EMPHASIZE INCREASED REVENUE AND NET PUBLIC BENEFITS. INCREASE THE ROLE OF THE STATES AND PROMOTE COST-EFFECTIVE MANAGEMENT OF THE NATIONAL FOREST SYSTEM, COOPERATIVE PROGRAMS AND RESEARCH.

The Recommended Program is an amalgam of the various alternatives described here. It emphasizes reduction of the Federal budget deficit, increased monetary returns from the National Forest System (NFS), maximum net public benefits, and meeting environmental and legal requirements. The Recommended Program is presented as a range of activities and outputs in order to reflect a short-term policy aimed at reducing the Federal budget deficit and a long-term policy for efficient management of natural resources. In order to describe the scope of the Program, it is discussed in terms of the High and Low Bounds of the range. The course of action described at the High Bound would begin immediately to make new investments and to maintain and restore existing facilities in order to meet the long-term renewable resource goals developed from the findings of the Assessment. At the Low Bound, the Program would be held constant through the year 1990 and expansion would be deferred in order to make a direct contribution to reduction of the Federal deficit by 1991.

Annually, receipts are about equal to costs at the High Bound until about 2000. After that, receipts rise well above costs as outputs continue to grow while costs rise much more slowly. In the early years at the Low Bound, receipts exceed costs largely because of cost reductions which reduce the asset base. Receipts also exceed costs through the latter part of the planning period at the Low Bound. By the year 2030, receipts exceed costs by 42 percent at the High Bound, while receipts exceed costs by 28 percent at the Low Bound.

Both Bounds of the Recommended Program would produce positive Regional economic effects including increased employment, income, and economic activity over the planning period.

Resource outputs, activities, and costs are displayed in tables 2.1, 2.2, and 2.3.

National Forest System

Air and water quality requirements and long-term soil productivity will be maintained at the High Bound throughout the planning period. Increased opportunities to improve watershed condition will occur after 1990. This responds to public comments which expressed the need for improving soil, water, and air; increasing water yield; and maintaining riparian areas. At the Low Bound, deferring some activities may increase the risk of not meeting watershed productivity requirements, and actions to improve watershed conditions will be limited to the highest priorities. Water yield will increase from 0.4 million acre-feet in 1986 to 1.6 million acre-feet in 2030 at the High Bound and to 1.3 million acre-feet in 2030 at the Low Bound. At the high bound, 60 percent of inventoried watershed management needs will be accomplished.

Minerals and energy resources management provides expanded opportunities for prospecting, exploration, and orderly development of these resources on NFS lands. Management activities are consistent with growing national needs for energy commodities and strategic minerals. At the High Bound, the number of cases handled rises from 24,000 in 1986 to 38,000 by 2030; at the Low Bound 36,000 cases will be handled by 2030. Timely processing of permit and lease applications and operating plans will be emphasized. The Program strives to increase benefits to the industrial sectors of the economy and returns to the U.S. Treasury, and to ensure quality management of the mineral and energy resources. Response to resource needs and coordination with other resources are emphasized.

The level of grazing remains the same between 1986 and 1990 at both Bounds because of long-term grazing permit obligations. The High Bound will result in a 15-percent increase in domestic livestock grazing over the planning period from 9.8 million animal unit months (AUM) in 1986 to 11.3 million AUMs by 2030. This responds to public comments by improving range productivity through cost-effective management and investments that will improve opportunities for recovering costs. After 1990, grazing use at the Low Bound will increase by 5 percent from 9.8 million AUMs to 10.3 million AUMs in 2030. The Low Bound contains minimal costs for the first 5 years. For areas that do not have opportunities for more cost-effective investments, grazing will be continued at levels that will avoid adverse social, economic, or environmental impacts.

The Program emphasizes restoration and improved maintenance of recreation facilities and trails to minimize losses of capital investments and prevent irretrievable resource damage. Recreation use increases from 215 million recreation visitor days (RVDs) in 1986 to 400 million RVDs by 2030. At the Low Bound, recreation use is projected at 340 million RVDs by 2030. Both levels emphasize dispersed recreation opportunities not generally provided by other sectors. The High Bound provides proper maintenance of existing recreation facilities and sites that support dispersed activities. At the Low Bound, the backlog of deferred maintenance will increase through most of the decade of the 1990s. Emphasis is given to recreation opportunities that do not directly compete with the private sector. The private sector is looked upon to provide capital investment for concentrated facilities such as ski areas. The Program provides for increased emphasis to restore quality and management standards.

Wilderness designations are projected to increase from 32 million acres in 1986 to a range of 35 to 40 million acres by 2030. The 1986 level includes all areas designated as wilderness by Congress as of May 1, 1986. At an increase in wilderness area to 35 million acres, wilderness use is expected to increase from the current 4 percent to 5 percent of total National Forest recreation activity. Use would increase to 6 percent if the National Forest total reached 40 million acres. The High Bound provides adequate funding for this projected range of increase. Limited funding for wilderness management, administration, and supporting research at the Low Bound may increase risk of adverse cumulative environmental effects on water quality, wilderness character, and wildlife habitat in heavily used wilderness areas.

The High Bound timber offer level is 11.4 BBF in 1986, rises to 11.6 BBF in 1990, 14 BBF in 2000, and 20 BBF by 2030. The Low Bound reduces timber offer level to 9 BBF by 1990, then rises to 11.8 BBF in 2000, and 15.6 BBF by 2030. Reforestation and timber stand improvements support future harvest levels at the High Bound. At the Low Bound, timber stand improvements and reforestation are held constant through 1990 which will defer needed timber stand improvement until after 1990.

The Program provides for 23 million wildlife and fish user days (WFUDs) in 1986, rising at the High Bound to 28 million user days by 1990 and to 40 million WFUDs by 2030. At the Low Bound, WFUDs will decline to 20 million in 1990 and reach 28 million by 2030. The 23 million WFUDs in 1986 do not include 9 million hunting, fishing, and selected recreation user days counted in the recreation outputs. This means a total of 32 million WFUDs were produced in 1986, but 9 million of these user days are shared because both recreation and wildlife and fish activities contribute costs and management (e.g. fish habitat improvement in a stream adjacent to developed recreation facilities). The current anadromous fish production is 118 million pounds annually for commercial, sport, and Native American fisheries.

Commercial anadromous fish production increases from 106 million pounds in 1986 to 177 million pounds at the High Bound and 135 million pounds at the Low Bound by 2030. In 1985, NFS production value was $90 million, approximately 21 percent of the Nation's direct economic value from commercial anadromous fisheries and 15 percent of the value of total fish landed. National Forest production increases to $205 million at the High Bound and $156 million at the Low Bound by 2030. Priority work involves biological inventory and habitat improvement for threatened and endangered species and habitat restoration for salmon and steelhead. States are encouraged to expand cooperative funding for habitat work on NFS lands. The first 2-3 years of the Program result in no change in habitat capability. However, by the year 2000, the current habitat capabilities are increased for hunted, fished, threatened, and endangered species.

Table 2.1 displays a summary of selected NFS outputs, activities, and costs. Appendix L displays more detailed information.

Table 2.1--Selected National Forest System Outputs, Activities, and Costs--Recommended Program

		Low Bound			High Bound		
	Units of Measure	1986	1990	2030	1986	1990	2030
Energy Minerals Produced	Quads	9.3	9.3	12.3	9.3	9.7	13.0
Permitted Grazing	Million AUMs	9.8	9.8	10.3	9.8	9.8	11.3
Recreation, Wilderness, and Wildlife Use	Million RVDs	248	248	387	248	276	465
Timber Offered	Billion Board Feet	11.4	9.0	15.6	11.4	11.6	20.0
Reforestation	Thousand Acres	346	335	570	346	426	600
Timber Purchaser Roads	Miles	6758	6037	9496	6758	8592	11240
Total NFS Costs	**Millions of 1982 Dollars**	**1509**	**1386**	**2578**	**1509**	**2048**	**2651**

State and Private Forestry

The Recommended Program for State and Private Forestry (S&PF) would increase the productivity of nonindustrial private forest (NIPF) lands to meet projected resource demands at a reasonable price. The Program will meet this objective by providing national leadership, incentives, and coordination in forest management, forest products utilization, planning assistance, pest management, and cooperative fire protection.

The Federal presence in response to this objective varies within a range defined by the High and Low Bounds. The High Bound responds to this objective at Federal funding levels necessary to encourage management and investment on NIPF lands, however, financial assistance to States would be phased out by 2006. The Low Bound is designed for the States to assume a greater share of total costs. All funding to States would be eliminated after 1986 at the Low Bound, except for some contracting for information gathering or other services essential to the Federal Government. Both the High and Low Bounds rely on the States and the private sector to provide an increasing share of the cost over time. As Federal financial assistance is eliminated, Federal technical assistance will increase to support a growing State program.

Reforestation and timber stand improvement accomplishments of 403,000 and 195,000 acres, respectively, in 1986 will more than double by 2000 to the level indicated in Statewide forest resource plans. This would provide 2.2 billion cubic feet of increased softwood timber annually by 2030 (table 2.37). This assumes continued funding of landowner incentives from the Agricultural Stabilization and Conservation Service for the Forestry Incentives Program and the Agricultural Conservation Program at the High Bound. Maintenance of needed levels of reforestation and timber stand improvement will require that the States establish necessary landowner incentives to replace declining Federal funding at the Low Bound. A commensurate increase in tree nursery production and tree improvement activities will be required to provide desirable planting stock to support reforestation.

Technical assistance to NIPF landowners for watershed protection and improvement will be substantially increased, particularly after 1990. The Program will emphasize multiresource management. The High Bound will provide substantial increases in outputs of other forest resources. The same level of accomplishment at the Low Bound will depend on expanded non-Federal funding sources.

Technical assistance to loggers and processors in harvesting, primary and secondary processing, and marketing will encourage more complete and efficient use of wood, and contribute to meeting Assessment demands by extending timber supplies from all ownerships. Annual usable wood volume will be increased by 145 million cubic feet in 1990, and by 250 million cubic feet by 2030.

Comprehensive planning for economic development of Statewide forest resources will be emphasized. Financial assistance to States for planning will be eliminated after 1993 at the High Bound, and after 1986 at the Low Bound. Technical assistance to State planners will continue to be provided.

Pest management on State and private lands at the High Bound would provide funds to States under the Cooperative Pest Action Program to support pest management activity essential to the Federal government. Federal cost sharing for suppression on non-Federal lands will be limited to 25 percent by 2000, and discontinued after 2015. At the Low Bound the Cooperative Pest Action Program is eliminated. Federal funding for pest suppression is eliminated after 1986; only limited Federal technical assistance will be provided after 1993. Pest management on Federal lands is the same in both the High and Low Bounds by 2000.

Cooperative fire protection activities at the High Bound will provide both financial and technical assistance to develop economically efficient individual State wildland fire-protection programs, improve efficiency through cooperation among States, and improve cooperation among States and Federal agencies. At the Low Bound, Forest Service involvement in development of an efficient State fire protection program is lessened, and financial assistance to States is eliminated after 1986.

Table 2.2 displays a summary for selected S&PF outputs, activities, and costs. Both appropriated and allocated costs are included in the total S&PF costs. Appendix L displays more detailed information.

Table 2.2--Selected State and Private Forestry Outputs, Activities, and Costs--Recommended Program

		Low Bound			High Bound		
	Units of Measure	1986	1990	2030	1986	1990	2030
Reforestation	Thousand Acres	403	323	1061	403	866	1061
Timber Stand Improvement	Thousand Acres	195	156	633	195	438	633
Improved Wood Utilization	Million Cubic Feet	88	64	250	88	145	250
Statewide Forest Resource Planning	Person Years	55	44	129	55	51	129
Total S&PF Cost	Millions of 1982 Dollars	70	22	86	70	121	179

Research

Funding for the Recommended Program for Research will be at the same levels for both the High and Low Bounds for 1986 and 1987. From 1987 to 1990 the High Bound and Low Bound funding levels remain nearly the same, with some additional emphasis in timber-related research, as well as additional funding for research construction. Significant differences between the Bounds does not occur until the year 2000 and beyond.

By the year 2000 the High Bound would begin to expand emphasis on biotechnology and other timber-related research which would result in improved tree species available for planting early in the 21st century. Emphasis on wilderness-related research would more than double by the year 2000 in the High Bound--expanding from the current funding level of approximately $300,000 per year to approximately $800,000. Annual funding for wildlife/fish research will expand by approximately 65 percent by the year 2000, as compared with current funding. Funding for protection research--insects, disease, and fire--will generally remain at reduced levels. For example, total protection research funding at the High Bound in the year 2000 will be approximately $27 million, as compared with 1980 funding of $37 million.

The Low Bound financially constrains all research at the 1987 President's budget level from 1987 through 1990. Within this constrained budget, funding for timber-related research will be emphasized--especially timber management and processing research. By the year 2000, total Research funding will increase by more than $20 million. The expanded Program will be more or less in proportion to earlier funding priorities, with timber management and processing research remaining as major concentrations of effort. This will provide the maximum amount of productivity-enhancing technology within a constrained budget.

Table 2.3 displays a summary of Research costs by opportunity area. Appendix L displays more detailed information.

Table 2.3--Research Costs by Opportunity Area--Recommended Program

	Millions of 1982 Dollars							
	Low Bound				High Bound			
Opportunity Area	1986	1990	2000	2030	1986	1990	2000	2030
Water	8.9	7.9	9.0	10.4	8.9	8.6	10.4	11.0
Minerals	3.2	2.6	3.1	3.5	3.2	2.9	3.5	4.2
Range	2.0	2.1	2.6	2.8	2.0	2.5	2.8	3.1
Recreation	1.4	1.5	2.6	3.3	1.4	2.4	3.3	4.6
Wilderness	.3	.3	.6	.8	.3	.6	.8	1.0
Timber	48.9	47.4	59.2	67.7	48.9	56.6	67.7	82.8
Wildlife/Fish	5.4	5.4	7.4	8.9	5.4	7.1	8.9	9.8
Protection	22.7	20.8	24.2	27.2	22.7	23.1	27.2	32.3
Total Research [1]	112.1	109.4	135.1	153.6	112.1	127.9	153.6	187.6

[1]Includes construction and administrative costs not shown in the body of the table. Also, for comparability with the Recommended Program document, Program totals for the High and Low Bound include Washington Office costs and some international forestry costs but these are not included in the body of the table. The tables displaying the 10 alternatives include these costs in the body of the table. For comparison with the alternatives, the Recommended Program is displayed with these costs in appendix L.

International forestry activities encompass all divisions of the Forest Service, but are concentrated primarily in NFS, S&PF, and Research. The international forestry subject areas include: (1) research related to international trade, (2) technical assistance activities and (3) international and technical exchanges. The latter two areas will involve all Forest Service divisions. Funding for international forestry is shown in table 2.4.

Table 2.4--International Forestry Costs--Recommended Program

	Millions of 1982 Dollars							
	Low Bound				High Bound			
Administrative Unit	1986	1990	2000	2030	1986	1990	2000	2030
NFS	1.00	1.00	1.00	1.00	1.00	1.30	2.10	3.70
S&PF	1.00	1.00	1.00	1.00	1.00	1.20	1.50	1.60
RESEARCH	4.10	4.10	6.00	8.00	4.10	5.30	7.20	9.20
OTHER [1]	.06	.06	.06	.06	.06	.08	.11	.35
TOTAL [2]	6.16	6.16	8.06	10.06	6.16	7.88	10.91	14.85

[1]Includes Programs and Legislation, and Administration expenditures.

[2]Additional funding for international forestry from sources outside the Forest Service totaled $736,425 in 1982. Outside funding is expected to continue at approximately this level through fiscal year 1988 when the Agency for International Development Forestry Support Agreement expires. Then, for the remainder of the planning period, outside funding is expected to be approximately one-half million dollars per year.

Alternative 1 (Constant Outputs)

CONTINUE CONSTANT LEVEL AND MIX OF PROGRAM OUTPUTS.

Alternative 1 provides for constant outputs, at the 1982 level of goods and services. The FY 1982 Appropriations Bill was used as a starting point for defining the output level. The alternative provides for continuation of the 1982 direction; continuation of existing policies, standards, and guidelines; updating the 1982 budget only for real cost changes over time; and, to the extent possible, continuation of 1982 production levels and mixes of resource outputs. Resource outputs and activities are displayed in tables 2.5, 2.6, and 2.7.

National Forest System

The minimum legal requirements and objectives for air, soil, and water protection would be met. The incremental water increase is 339,000 acre-feet from 1986 to 2030.

Although mineral exploration and development would continue, increased emphasis would be on protection of surface resources and mitigation of adverse environmental impacts. Energy production would decline from 9.1 quads to 9.0 quads in 2030.

Permitted grazing use is maintained at a level of 9.7 million animal unit months after 1986. This level is about 92 percent of the total potential capacity in 1986. In 1986, 74 percent of the range allotments would be managed with plans based on completed range analyses, increasing to 94 percent in 2030.

Recreation opportunities would remain varied with the current mix of opportunities available. Continuing the current recreation activities would provide for 218 million recreation visitor days (RVDs) through 2030. Recreation use has historically increased about 2 to 3 percent per year. The alternative would not respond to this increase. The effect would be the need to close some facilities and reduce the quantity and quality of service. In the later periods, increased control measures may be required to minimize environmental impacts resulting from unmanaged use. Only 18 percent of the RVDs would meet established management standards by 2030.

Wilderness estimates include currently designated areas plus the Administration's recommendations on areas to be added. Where the Administration's position had not been determined or stated, RARE II recommendations were used. The 1986 level of 33.5 million acres was held constant through the planning period.

Over the next 50 years, some unroaded areas would be entered through scheduled timber sale offerings. The annual sale offerings of 11.2 billion board feet of timber in 1986 would remain constant through time. However, a reduction in the size of trees harvested in the Northwest in 2030 could result in a slight decrease in board foot volume, although the cubic foot volume would remain constant.

The Forest Service objectives for threatened, endangered, and sensitive species would not be met, although legal requirements are met. Anadromous fisheries production would be constant at 110 million pounds through 2030. Current wildlife habitat diversity, as measured through management indicator species, would be maintained. In some Regions, habitat for old-growth dependent species would decline, but viable populations would be maintained. Carrying capacity for species currently hunted and fished would decline approximately 5 percent from current levels by 2000. Total hunting, fishing, and related recreation use reported in all opportunity areas would rise from 39.9 million user days in 1986 to 40.0 million in 2030. For 1986, 13.9 million user days are produced from recreation management activities while 26 million are produced directly from wildlife activities or as a result of coordination with timber, range or water activities.

Table 2.5 displays a summary of selected NFS outputs, activities, and costs. Appendix L displays more detailed information.

Table 2.5--Selected National Forest System Outputs, Activities, and Costs--Alternative 1

	Units of Measure	1986	1990	2030
Energy Minerals Produced	Quads	9.1	9.1	9.0
Permitted Grazing	Million AUMs	9.8	9.7	9.7
Recreation, Wilderness, Wildlife Use	Million RVDs	252	253	260
Timber Offered	Billion Board Feet	11.2	11.1	10.5
Reforestation	Thousand Acres	376	380	361
Timber Purchaser Roads	Miles	7667	7502	7279
Total NFS Costs	Millions of 1982 Dollars	1909	1933	1825

State and Private Forestry

State and Private Forestry would continue to provide limited levels of financial and technical assistance through State forestry agencies in support of selected high-priority market and nonmarket resources. Outputs attributable to Federal assistance would approximate 1982 levels. Any significant increase in forestry investments on State and private forest lands would have to result from State, local government, and private initiatives rather than from Federally-supported incentives or other assistance.

Multiresource planning and other technical assistance to private landowners would continue to be provided on almost 4.4 million acres. While this assistance would be generally directed at the production of timber it would provide induced benefits for dispersed recreation, wildlife and fish habitat improvement, and forage production. Cooperative reforestation and timber stand improvement activities at the Alternative 1 level would produce more than 1.6 billion cubic feet of increased softwood timber annually by the year 2030 (table 2.37). Cooperative assistance for the protection of soil and water resources would continue at 1982 levels; however, watershed improvement projects would be minimal at this budget level.

Technical assistance to loggers and processors to encourage more complete and efficient use of wood would continue at a moderate level, resulting in an additional 130 million cubic feet of wood to be made available annually from timber harvested.

Forest pest management programs for prevention, detection, evaluation, and suppression activities would follow recent trends on State, private, and Federal lands. Prevention activities would continue at a low level through resource planning, program development, and preventive thinning. Integrated pest management practices would continue.

Technical and financial assistance to States for wildland fire protection would continue with economic efficiency gradually improving through better management, coordination, and cooperative responses to extreme fire situations.

Table 2.6 displays a summary of selected State and Private Forestry outputs, activities, and costs. Appendix L displays more detailed information.

Table 2.6--Selected State and Private Forestry Outputs, Activities, and Costs--Alternative 1

	Units of Measure	1986	1990	2030
Reforestation	Thousand Acres	403	403	402
Timber Stand Improvement	Thousand Acres	195	196	197
Improved Wood Utilization	Million Cubic Feet	129	132	132
Statewide Forest Resource Planning	Person Years	80	80	81
Total S&PF Costs	Millions of 1982 Dollars	90	90	90

Research

Research provides a relatively low level of support to meet the long-run resource demands shown in the 1979 Assessment and the Assessment Supplement. The 1982 Research mix would continue with some modification later in the planning period as work on specific research problems are completed. This alternative emphasizes development of new information and technology to support the timber and protection goals. However, funding for timber and protection research is gradually decreased over the planning period while funding is gradually increased for range, recreation, minerals, and wildlife and fish.

Within the timber goal, emphasis would be placed on forest regeneration and yield techniques as appropriate for different regions of the country. In the South, research would continue to provide new engineering knowledge for economical harvesting and regeneration systems. Modest progress would be made toward the development of biotechnology techniques.

Research under the protection goal would include modest funding for development of chemical, biological, or physical methods for controlling insect damage to wood in storage and in use; minimizing disease losses in intensively cultured and natural forests; and improving fire control methods. While some progress would be made in determining the mechanisms and impacts of acid deposition, it would probably not be sufficient to meet anticipated needs.

Research on wildlife habitat, outdoor recreation, and urban forestry would continue to receive low priority. The demand for rehabilitation technology for surface mining areas will likely remain high. Therefore, the research to rehabilitate and reclaim these lands disturbed by mining will be diversified to include revegetation, erosion control, hydrology, and nutrient cycling.

Table 2.7 displays a summary of Research costs by opportunity area. Appendix L displays more detailed information.

Table 2.7--Research Costs by Opportunity Area in Millions of 1982 Dollars--Alternative 1

Opportunity Area	1986	1990	2030
Water	8.4	8.5	8.1
Minerals	3.6	3.6	4.7
Range	3.2	3.2	3.7
Recreation	2.2	2.2	2.4
Wilderness	0.2	0.2	0.5
Timber	61.3	61.1	60.1
Wildlife/Fish	6.2	6.2	6.4
Protection	26.3	26.5	25.6
Total Research [1]	129.1	129.1	129.1

[1]Includes construction and administration costs not shown in the body of the table.

International forestry activities for NFS, S&PF, and Research in this alternative are a continuation of the current funding of $4.6 million through all time periods. The major effort is aimed at tropical forestry problems. Research will include development of information on U.S. and international timber supply-demand relationships. Cooperative research, technical assistance, and training with Canada, Mexico, and other countries would continue to address problems of mutual concern.

Alternative 2 (High Market)

EMPHASIZE ACHIEVEMENT OF HIGH OUTPUT LEVELS FOR TIMBER, RANGE, MINERALS, AND OTHER MARKET RESOURCES. PRODUCTION OF NONMARKET OUTPUTS WILL BE AT ECONOMICALLY EFFICIENT LEVELS, CONSISTENT WITH THE MARKET EMPHASIS.

This alternative places emphasis on timber, range, minerals, and other market outputs. Other resources are managed at levels economically and environmentally consistent with the emphasis placed on market-oriented outputs. Resource outputs and activities are displayed in tables 2.8, 2.9, and 2.10. There are no long-term budget limits on this alternative. However, in the near term, projected budget levels reflect a reasonable link to the fiscal year 1982 level and represent a program that can be implemented. Opportunities are expanded to collect and increase user fees and receipts for activities that have potential to produce income for the U.S. Treasury.

National Forest System

The minimum legal requirement and objectives for protecting air, soil, and water would be met under this alternative. Soil and water resource improvements would be implemented on 75 percent of the areas with unsatisfactory watershed conditions. By 1987, specific opportunities would be identified for increasing water yield on selected areas. Cost-effective vegetative management programs to increase water yield would begin in 1988 and be completed by 2030. Compared to the current level, there would be a nearly 1.2 million acre-feet increase in water yield by 2030. Flood-hazard reductions would be implemented by the year 2000 on 20 percent of current flood-source areas and on the remaining areas by 2030.

Mineral exploration and development would be facilitated by timely processing of applications. Energy produced would increase 48 percent by 2030, from 9.5 quads in 1986 to 14.1 quads in 2030.

Permitted grazing on NFS lands would increase from 10.2 million AUMs in 1986 to 13.3 million in 2030. About 76 percent of the allotments in 1986 would be managed based on completed range analyses. This level would increase to 96 percent in 2030.

By 2030, recreation use would reach 371 million RVDs, a 70-percent increase above Alternative 1. While motorized recreation use would increase, roadless recreation opportunities would be reduced. By 2030, 61 percent of the RVDs would meet management standards.

Wilderness acres are approximately 30.2 million acres in 1986 and increase to 33 million in 2030.

Alternative 2 results in a 35-percent increase in the amount of timber offered by 1990; by 2030, 88 percent more timber would be offered annually compared to the constant output alternative. Annual sale offerings of 13.6 billion board feet in 1986 would increase to 19.7 billion by 2030. The increase in sale offerings would require about 43 percent more miles of road annually than Alternative 1 by 1990.

The expected timber harvest for 2030 would require 12,500 miles of road, an 81-percent increase over the current level.

Alternative 2 does not meet management or recovery objectives for threatened, endangered, and sensitive species. The carrying capacity for species commonly hunted and fished would generally decrease 5 to 10 percent from current levels by 2000. The 170 million pounds of commercial fish harvested in 2030 represent a 55-percent increase from the 1986 level of 109 million pounds. Total hunting, fishing, and related recreation reported in all opportunity areas would rise from 38.8 million user days in 1986 to 48.7 in 2030. For 1986, 12.8 million user days are produced from recreation management activities while 26 million are provided directly from wildlife activities as a result of coordination with timber, range, and water activities.

Table 2.8 displays a summary of selected National Forest System outputs, activities, and costs. Appendix L displays more detailed information.

Table 2.8--Selected National Forest System Outputs, Activities and Costs--Alternative 2

	Units of Measure	1986	1990	2030
Energy Minerals Produced	Quads	9.5	10.1	14.1
Permitted Grazing	Million AUMs	10.2	10.7	13.3
Recreation, Wilderness, Wildlife Use	Million RVDs	251	279	426
Timber Offered	Billion Board Feet	13.6	15.0	19.7
Reforestation	Thousand Acres	457	561	730
Timber Purchaser Roads	Miles	9206	10706	12448
Total NFS Costs	Millions of 1982 Dollars	2292	2675	2841

State and Private Forestry

State and Private Forestry activities would be accelerated to meet the highest timber and range production goals indicated in current Statewide forest resource plans.

Federal technical and financial assistance would be expanded in an effort to increase and protect the volume of timber produced on State and private forest lands. Specific cooperative efforts would be made to accelerate forest management planning assistance to landowners, targeting on high potential opportunities, and stimulating investments on private lands with full consideration of landowner objectives.

Cooperative reforestation and timber stand improvement activities would produce 6.2 billion cubic feet of increased softwood timber annually by 2030 (table 2.37), which is almost four times the Alternative 1 level. Expanded technical assistance to loggers and processors would encourage more complete and efficient utilization of timber harvested. Annual usable wood volume would be increased by 136 million cubic feet in 1986, and by 324 million cubic feet by 2030, a 145-percent increase over the Alternative 1 level.

Increased emphasis would also be placed on cooperative programs that protect and encourage the production of nonmarket outputs from State and private forest lands. Technical assistance for protection of soil and water resources and watershed improvement would be highest in this Alternative.

Forest pest management prevention activities would be increased to a high level through integrated pest management strategies of resource management and direct treatments. Detection, evaluation, and suppression activities on both State and private and Federal lands would also be commensurate with the value of the resources and products protected.

Table 2.9 displays a summary of selected State and Private Forestry outputs, activities, and costs. Appendix L displays more detailed information.

Table 2.9--Selected State and Private Forestry Outputs, Activities, and Costs--Alternative 2

	Units of Measure	1986	1990	2030
Reforestation	Thousand Acres	766	1291	1380
Timber Stand Improvement	Thousand Acres	576	1001	1113
Improved Wood Utilization	Million Cubic Feet	136	292	324
Statewide Forest Resource Planning	Person Years	99	183	191
Total S&PF Costs	Millions of 1982 Dollars	148	254	283

Research

Research would provide medium support to meet the long-term resource demands and protection concerns outlined in the 1979 Assessment and the Assessment Supplement. A considerable portion of the research activities would be committed to continuing long-term studies, data series, and experimental plots. However, as funding increases over the planning period, emphasis would be placed on increasing timber outputs through knowledge developed in such areas as genetics, biotechnology, harvesting and wood utilization. Research on the economic feasibility of new products and processes would also be accelerated.

Research to determine the causes and impacts of acid deposition would be expanded from relatively low levels in 1986 to a significant multiregional and multidisciplinary effort by 1990 as more funding became available.

Improved forest management guidelines would be developed for private nonindustrial landowners, who own over 70 percent of the commercial timberland in the South. Research would be expanded on tax, legal, and economic impacts of alternative intensive management practices. Emphasis would be on small properties and sites.

Research would be greatly expanded in the South and East on processing systems to utilize small, low-grade hardwoods. New adhesive systems would be developed for reconstituted wood products with emphasis on the use of tannin and lignin components.

The development of multiresource evaluation techniques would be accelerated. Emphasis would be placed on ecological and sociological impacts of multiple-use alternatives.

Wilderness, wildlife habitat, watershed management, outdoor recreation, and urban forestry research would receive relatively little attention until late in the planning period. The increase in these activities would be directed toward evaluation and mitigation measures that would potentially occur with intensive management.

Table 2.10 displays a summary of Research costs by opportunity area. Appendix L displays more detailed information.

Table 2.10--Research Program Costs by Opportunity Area in Millions of 1982 Dollars--Alternative 2

Opportunity Area	1986	1990	2030
Water	8.6	11.7	14.8
Minerals	4.3	5.8	7.5
Range	4.5	6.6	8.6
Recreation	1.9	2.8	3.9
Wilderness	0.2	0.3	0.3
Timber	69.0	93.1	119.5
Wildlife/Fish	6.1	8.6	11.2
Protection	29.1	39.2	50.0
Total Research [1]	143.0	195.0	252.6

[1] Includes construction and administration costs not shown in the body of the table.

International forestry activities are the same for Alternatives 2, 3, 4, and 9, and provide moderate funding oriented mainly to international trade and tropical forestry problems located primarily in developing countries. An Associate Experts program would be initiated to build a cadre of Forest Service experts on international forestry. A science and technology exchange program and a management training course would also be initiated to provide much needed assistance and training for specialists, managers, and administrators of forestry programs in developing countries. The cost of the international forestry activities for NFS, S&PF, and Research would be $5.3 million for 1986, $6.2 million for 1990, and $9.7 million for 2030.

Alternative 3 (High Nonmarket)

EMPHASIZE ACHIEVEMENT OF HIGH OUTPUT LEVELS OF WATER, WILDLIFE AND FISH, RECREATION, WILDERNESS, AND OTHER NONMARKET RESOURCES. PRODUCTION OF MARKET OUTPUTS WILL BE AT ECONOMICALLY EFFICIENT LEVELS, CONSISTENT WITH THE NONMARKET EMPHASIS.

Alternative 3 emphasizes nonmarket resources and amenity values. Management for market outputs would be at levels economically and environmentally consistent with the emphasis on amenity values. Resource outputs, activities, and costs are displayed in tables 2.11, 2.12, and 2.13.

There are no long-term budget constraints on this alternative. In the near term, projected budget levels reflect a reasonable tie to the fiscal year 1982 level, and represent a program that can be implemented. In Alternative 3, adverse impacts on total local employment are avoided since market outputs are provided at economically efficient levels.

National Forest System

Air quality, water yield, water quality, and soil productivity would be emphasized under this alternative. Higher quality water would be provided to meet increased recreation and fisheries activities.

Although mineral exploration and development would continue, increased emphasis would be placed on protection of surface resources and mitigation of adverse environmental impacts. Energy produced would increase from 9.1 quads in 1986 to 9.9 quads in 2030.

Grazing use would be similar to the 1982 level with 9.7 million AUMs in 1986. Permitted grazing would decrease by 2 percent, to 9.5 million AUMs in 2030. About 74 percent of the range allotments would be managed with a plan based on completed range analyses in 1986, increasing to 89 percent in 2030.

Recreation use would nearly double from 227 million RVDs in 1986 to about 438 million by 2030. The thrust of this alternative is recreation oriented and thus all forms of recreation opportunities appropriate to the National Forest role would be provided. More than 1,475 miles of National Forest trails would be constructed or reconstructed in 1986. About 96 percent of the RVDs would meet established management standards by 2030.

National Forest System lands in the National Wilderness Preservation System would increase about 38 percent from 34 million acres in 1986 to 43 million in 2030. Wilderness estimates for this alternative are based on the premise that most wilderness study and further planning areas would be designated as wilderness.

This alternative would provide approximately 8 percent less timber in 1986 than Alternative 1, and would provide the lowest level of timber of any of the alternatives, except Alternatives 3A and 5. About 7,200 miles of road (10 percent less than Alternative 1) would be needed to produce this level of timber in 1986. Sale offering in 1986 would be 10.4 billion board feet and would increase to 12.0 in 2030.

This alternative meets or exceeds Forest Service management and recovery objectives for threatened, endangered, and sensitive wildlife and fish species. Commercial harvest of anadromous fish increases from 107 million pounds in 1986 to 150 million in 2030. Carrying capacity for species commonly hunted and fished would generally increase 10 to 15 percent over current levels by 2030. Total hunting, fishing, and related recreation use reported in all opportunity areas would rise from 40.9 million user days in 1986 to 50.2 million in 2030. For 1986, 12.9 million user days are produced from recreation management activities while 28 million are produced directly from wildlife activities as a result of coordination with timber, range, and water activities.

Table 2.11 displays a summary of selected National Forest System outputs, activities, and costs. Appendix L displays more detailed information.

Table 2.11--Selected National Forest System Outputs, Activities, and Costs--Alternative 3

	Units of Measure	1986	1990	2030
Energy Minerals Produced	Quads	9.1	9.2	9.9
Permitted Grazing	Million AUMs	9.7	9.5	9.5
Recreation, Wilderness, Wildlife Use	Million RVDs	270	302	508
Timber Offered	Billion Board Feet	10.4	10.5	12.0
Reforestation	Thousand Acres	371	379	397
Timber Purchaser Roads	Miles	7214	7656	8055
Total NFS Costs	Millions of 1982 Dollars	2107	2369	2369

State and Private Forestry

State and Private Forestry activities would be about double the 1982 levels; outputs would be at a level halfway between Alternative 1 and Alternatives 4 and 8.

By 2030, multiresource planning and other technical assistance to private landowners would be provided on almost 6.3 million acres, a 54-percent increase over the Alternative 1 level. While assistance would generally be directed at the production of timber outputs to meet landowners' objectives, increased emphasis would be placed on the production of nonmarket outputs from State and private lands. Cooperative reforestation and timber stand improvement activities would produce 3.0 billion cubic feet of increased softwood timber annually by 2030 (table 2.37), which is almost double the increase expected under Alternative 1. More technical assistance for protection of soil and water resources would be provided as timber management activity is increased. Watershed improvement projects would be initiated in high priority areas.

A moderate increase in technical assistance to loggers and processors would encourage more complete and efficient use of wood. By 2030, an additional 217 million cubic feet of wood would be made available annually, a 64-percent increase from Alternative 1.

Integrated forest pest management activities on both State and private and Federal lands, and cooperative fire protection activities, would be commensurate with the value of the resources and products protected.

Table 2.12 displays a summary of selected State and Private Forestry outputs, activities, and costs. Appendix L displays more detailed information.

Table 2.12--Selected State and Private Forestry Outputs, Activities, and Costs--Alternative 3

	Units of Measure	1986	1990	2030
Reforestation	Thousand Acres	601	637	779
Timber Stand Improvement	Thousand Acres	387	493	712
Improved Wood Utilization	Million Cubic Feet	124	172	217
Statewide Forest Resource Planning	Person Years	80	149	75
Total S&PF Cost	Millions of 1982 Dollars	118	158	170

Research

Research proposed in Alternative 3 would provide low to medium levels of support to meet the long-term resource demands and protection requirements stated in the 1979 Assessment and in the Assessment Supplement. Research is directed toward information and technology needed to produce high output levels of water, wildlife, outdoor recreation, and other nonmarket values from all lands. Research funding directed to the timber goal would increase by 18 percent above Alternative 1 in 1990 and continue to increase through the planning period.

Priority would be placed on the development of wildlife habitat models for a wide variety of species and guidelines for intensive wildlife improvement practices.

In the area of watershed research, emphasis would be placed on determining the magnitude and duration of forest management effects on water yield and distribution, water quality, and aquatic habitat. Research would also develop additional information on the effects of atmospheric deposition on aquatic and wildlife habitats and on growth and yield of forest stands.

Protection research (insects, diseases, and fire) would be stepped up with emphasis on esthetics and wildlife habitat rather than on commercial timber production. Fire research would address the impacts of prescribed burning on wildlife habitat as well as water yield and quality. The role of fire in wilderness areas would also be evaluated.

Table 2.13 displays a summary of Research costs by opportunity area. Appendix L displays more detailed information.

The international forestry activities for Alternative 3 are the same as for Alternative 2.

Alternative 3A (High Wilderness)

EMPHASIZE ACHIEVEMENT OF HIGH OUTPUT LEVELS OF WATER, RECREATION, WILDERNESS, WILDLIFE AND FISH, AND OTHER NONMARKET RESOURCES. PRODUCTION OF MARKET OUTPUTS WILL BE AT ECONOMICALLY EFFICIENT LEVELS, CONSISTENT WITH THE NONMARKET AND WILDERNESS EMPHASIS.

Table 2.13--Research Costs by Opportunity Area in Millions of 1982 Dollars--Alterntive 3

Opportunity Area	1986	1990	2030
Water	9.3	10.3	16.5
Minerals	4.3	4.7	7.2
Range	3.5	4.3	6.5
Recreation	4.4	5.1	9.1
Wilderness	0.5	1.1	1.8
Timber	62.9	72.7	111.5
Wildlife/Fish	8.5	9.7	14.6
Protection	26.5	30.9	47.3
Total Research [1]	139.0	161.0	252.0

[1] Includes construction and administrative costs not shown in the body of the table.

Alternative 3A emphasizes wilderness, nonmarket resources, and amenity values. Management for market outputs would be at levels economically and environmentally consistent with the emphases. Resource outputs, activities, and costs are displayed in table 2.14.

There are no long-term budget constraints on this alternative. In the near term, projected budget levels reflect a reasonable tie to the fiscal year 1982 level, and represent a program that can be implemented. In Alternative 3A, adverse impacts on total local employment are avoided since market outputs are provided at economically efficient levels.

National Forest System

Air quality, water yield, water quality, and soil productivity would be emphasized under this alternative. Higher quality water would be provided to meet increased recreation and fisheries activities.

Although mineral exploration and development would continue, increased emphasis would be placed on protection of surface resources and mitigation of adverse environmental impacts. Energy produced would increase from 9.1 quads in 1986 to 9.9 quads in 2030.

Grazing use would be similar to the 1982 level, with 9.7 million AUMs in 1986. Permitted grazing would decrease by 3 percent, to 9.4 million AUMS in 2030. About 74 percent of the range allotments would be managed with a plan based on completed range analyses in 1986, increasing to 89 percent in 2030.

Recreation use would nearly double from 227 million RVDs in 1986 to about 437 million RVDs by 2030. The thrust of this alternative is recreation and wilderness oriented and thus all forms of recreation opportunities that are appropriate to the National Forest role would be provided. More than 1,490 miles of National Forest trails would be constructed or reconstructed in 1986. About 96 percent of the RVDs would meet established management standards by 2030.

National Forest System lands in the National Wilderness Preservation System would increase more than 53 percent from 34 million acres in 1986 to 52 million acres in 2030. Wilderness estimates are based on the premise that all wilderness study and further planning areas would be designated as wilderness as well as significant portions of areas recommended for nonwilderness in RARE II. The basis for these latter recommendations was pending legislative proposals in the 98th Congress.

This alternative would provide approximately 9 percent less timber in 1986 than Alternative 1, and provides the lowest level of timber of any of the alternatives, except Alternative 5. About 7,200 miles of road (8 percent less than Alternative 1) would be needed to produce this level of timber in 1986. Sale offering in 1986 would be 10.3 billion board feet and would increase to 12.0 in 2030.

This alternative meets or exceeds Forest Service management and recovery objectives for threatened, endangered, and sensitive wildlife and fish species. Commercial harvest of anadromous fish increases from 107 million pounds in 1986 to 150 million in 2030. Carrying capacity for species commonly hunted and fished would generally increase by 10 to 15 percent over current levels by 2030. Total hunting, fishing, and recreation-related use reported in all opportunity areas would rise from 40.9 million user days in 1986 to 50.2 million in 2030. For 1986, 12.9 million user days are produced from recreation management activities while 28 million are directly produced from wildlife activities or as a result of coordination with timber, range, and water management activities.

Table 2.14 displays a summary of selected National Forest System outputs, activities, and costs. Appendix L displays more detailed information.

Table 2.14--Selected National Forest System Outputs, Activities, and Costs--Alternative 3A.

	Units of Measure	1986	1990	2030
Energy Minerals Produced	Quads	9.1	9.2	9.9
Permitted Grazing	Million AUMs	9.7	9.5	9.4
Recreation Wilderness, Wildlife Use	Million RVDs	272	303	512
Timber Offered	Billion Board Feet	10.3	10.5	12.0
Reforestation	Thousand Acres	370	378	396
Timber Purchaser Roads	Miles	7195	7631	8033
Total NFS Costs	Millions of 1982 Dollars	2104	2364	2366

State and Private Forestry

State and Private Forestry activities for Alternative 3A are the same as for Alternative 3. Appendix L displays a summary of State and Private Forestry outputs, activities, and costs.

Research

The Research and international forestry activities for Alternative 3A are the same as for Alternative 3. Appendix L displays a summary of Research costs by opportunity area.

Alternative 4 (High All Resources)

ACHIEVE HIGH OUTPUT LEVELS OF BOTH MARKET AND NONMARKET RESOURCES.

Alternative 4 provides for a high level of outputs in all opportunity areas. This alternative is highly responsive to the demands identified in the Assessment.

There are no budget constraints on this alternative. Projected budget levels tie to 1982 and represent a program that can be implemented. Alternative 4 represents a management strategy responsive to the long-term goals identified in the revised Statement of Policy for the 1980 RPA Program and the maximum achievement of multiple use and National Forest Management Act direction. Resource outputs, activities, and costs are displayed in tables 2.15, 2.16, and 2.17.

National Forest System

Air, soil, and water quality would be protected and in many places enhanced under this alternative. Incremental water yield increases from 654,000 acre-feet in 1986 to 1,524,000 acre-feet in 2030.

Minerals exploration and development would be facilitated through increased access and timely processing of applications. Protection of surface resources and environmental quality would be provided and would be consistent with existing laws and regulations. Energy produced would increase from 9.4 quads in 1986 to 13.2 quads in 2030.

Permitted grazing would increase by 9 percent during the planning period, from 10.0 million AUMs in 1986 to 10.9 million in 2030. Range conditions would be fair to good with 76 percent of the allotment management plans based on completed range analyses in 1986, increasing to 96 percent in 2030.

Recreation use would increase nearly 85 percent from 225 million RVDs in 1986 to 417 million in 2030. Recreation use in 1986 would be the same as the 1982 level. Nearly 1,000 miles of trails would be constructed or reconstructed in 1986, increasing to over 1,700 miles in 2030. Sixty-nine percent of the RVDs would meet established management standards.

Wilderness acreage designations would increase approximately 20 percent, from 34 million acres in 1986 to 39 million acres in 2030. Wilderness estimates for this alternative consider that a large portion of wilderness study and further planning areas would be added to the National Wilderness Preservation System.

This alternative provides for a 15-percent increase in timber offered in 1986 as compared with the 1982 level; the 1986 level of 13.3 billion board feet would increase to 17.4 billion board feet in 2030. This sale offering would require about 9,000 miles of timber purchaser road construction, a 16-percent increase over Alternative 1 in 1986.

Carrying capacity for species commonly hunted and fished would increase 5 to 10 percent over current levels by 2000. Forest Service management and recovery objectives are met for threatened, endangered, and sensitive species. Commercial harvest of anadromous fish is similar to Alternative 2, increasing from 110 million pounds in 1986 to nearly 172 million in 2030. Total hunting, fishing, and related recreation use reported in all opportunity areas would increase from 40.8 million user days in 1986 to 50.4 million in 2030. For 1986, 13.8 million user days are provided from recreation management activities while 27 million are produced directly from wildlife activities or as a result of coordination with timber, range, and water activities.

Table 2.15 displays a summary of several selected National Forest System outputs, activities, and costs. Appendix L displays more detailed information.

Table 2.15--Selected National Forest System Outputs, Activities and Costs--Alternative 4

	Units of Measure	1986	1990	2030
Energy Minerals Produced	Quads	9.4	9.6	13.2
Permitted Grazing	Million AUMs	10.0	10.2	10.9
Recreation, Wilderness, Wildlife Use	Million RVDs	265	294	480
Timber Offered	Billion Board Feet	13.3	14.6	17.4
Reforestation	Thousand Acres	453	546	601
Timber Purchaser Roads	Miles	9017	10555	11242
Total NFS Costs	Millions of 1982 Dollars	2292	2691	2675

State and Private Forestry

State and Private Forestry activities would provide levels of financial and technical assistance through State forestry agencies for moderately increased market and nonmarket outputs. Outputs attributable to Federal assistance would approximate the 1980 RPA Program and would be at generally higher levels than under Alternative 1.

Wood production would be a major thrust of the State and Private Forestry, but financial and technical assistance would continue to support a wide variety of multipurpose protection and management activities geared to the objectives of the landowners. Cooperative reforestation and timber stand improvement activities would produce about 4.4 billion cubic feet of increased softwood timber annually by 2030 (table 2.37), which is 268 percent greater than the increase expected under Alternative 1. A moderate increase in technical assistance to loggers and processors would encourage more complete and efficient use of wood. By 2030, an additional 272 million cubic feet of wood would be made available annually, which is more than double the increase under Alternative 1.

To support these outputs, forest pest management activities would be at a high level on State and private forest lands, and at a moderate level on Federal lands commensurate with resource values and products produced. Cooperative fire protection would be provided at the 1980 RPA Program level.

Table 2.16 displays a summary of selected State and Private Forestry outputs, activities, and costs. Appendix L displays more detailed information.

Table 2.16--Selected State and Private Forestry Outputs, Activities, and Costs--Alternative 4

	Units of Measure	1986	1990	2030
Reforestation	Thousand Acres	768	852	1134
Timber Stand Improvement	Thousand Acres	484	693	1042
Improved Wood Utilization	Million Cubic Feet	126	226	272
Statewide Forest Resource Planning	Person Years	86	221	76
Total S&PF Costs	Millions of 1982 Dollars	145	223	241

Research

Research in this alternative would provide moderate to strong support for the needs stated in the 1979 Assessment and in the Assessment Supplement in a balanced market-nonmarket resource program. This alternative would retain the approximate current mix of research activities, but with a total budget that rises about 25 percent above the current level by 1990.

Research related to timber production would be at 25 percent above Alternative 1 in 1990 and continue to increase during the planning period. Significant increases in research would also occur in outdoor recreation and urban forestry. Funding would also increase considerably over the planning period for wildlife and fish research, including identification of critical habitat conditions for threatened and endangered species. Strong research activities are projected for determining the effects of acid deposition on forest ecosystems and developing multiresource evaluation techniques after 1990. Investments in protection research (insects, diseases, fire) increase significantly during the planning period.

Table 2.17 displays a summary of Research costs by opportunity area. Appendix L displays more detailed information.

Table 2.17--Selected Research Costs by Opportunity Area, in Millions of Dollars--Alternative 4

Opportunity Area	1986	1990	2030
Water	8.5	10.4	15.6
Minerals	4.2	4.9	7.2
Range	3.7	5.3	7.3
Recreation	3.8	4.8	6.7
Wilderness	0.4	0.7	1.0
Timber	65.8	82.2	119.4
Wildlife/Fish	6.5	7.9	11.4
Protection	26.9	32.1	47.7
Total Research [1]	139.0	172.0	254.0

[1] Includes construction and administrative costs not shown in the body of the table.

The international forestry activities for Alternative 4 are the same as for Alternative 2.

Alternative 5 (Reduced)

REDUCE FEDERAL EMPHASIS ON RENEWABLE RESOURCE MANAGEMENT. ENCOURAGE STATE AND LOCAL GOVERNMENTS AND THE PRIVATE SECTOR TO INCREASE MARKET AND NONMARKET OUTPUTS. ALL PROGRAMS WILL BE BELOW CURRENT LEVELS.

An explicit budget constraint is the foundation of this alternative. It displays the level of outputs, activities and costs associated with a budget reduced 25 percent below the fiscal year 1982 budget. Outputs are significantly reduced in all areas. Within these budgetary constraints, managers will endeavor to meet the needs of dependent communities although there will be a reduction in current services. Resource outputs, activities, and costs are displayed in tables 2.18, 2.19, and 2.20.

National Forest System

Air, soil, and water quality activities would be reduced in comparison to Alternative 1. Only the minimum protection requirements would be met. By 2030, incremental water yield would increase by 45 percent from 405,000 acre-feet in 1986.

Mineral exploration and development would be constrained due to the inability to process applications. Emphasis would be placed on refinement and improvement of procedures to protect surface resources while permitting exploration and extraction of minerals. Energy produced would decline about 50 percent by 2030.

Permitted grazing in this alternative would decrease about 14 percent from the current level; in 1986, 8.6 million AUMs would be permitted with 74 percent of the allotments managed under plans based on completed range analyses; by 2030, 7.2 million AUMs would be permitted with 83 percent of the allotments managed under plans based on completed range analysis.

Decreases in recreation funding would necessitate closing many recreation facilities and reducing most services. The quality of recreation experiences would be below all other alternatives. Access to large, selected forest areas would be limited for recreation purposes. As a result, there would be a reduction in recreation use. In 1986, recreation use would be 19 percent below the 1982 level. Only 13 percent of the RVDs would meet established management standards.

Wilderness acreage in Alternative 5 includes only those areas currently designated as part of the National Wilderness Preservation System and would be held constant through 2030 at 32.0 million acres.

The programmed timber sales offered in 1986 would decrease to 8.7 billion board feet, about 25 percent less than Alternative 1. Sale offerings would remain relatively stable throughout the planning period.

This alternative would not meet Forest Service management objectives and recovery schedules for threatened, endangered, and sensitive species. By 2000, carrying capacity for species commonly hunted and fished would decline approximately 5 percent from the expected 1985 conditions. Commercial harvest of anadromous fish, 104 million pounds in 1986, would remain constant through 2030. Total hunting, fishing, and related recreation use reported in all opportunity areas would decrease from 35.3 million user days in 1986 to 31.8 million in 2030. For 1986, 12.3 million user days are produced from recreation management activities while 23 million are produced directly from wildlife activities or as a result of coordination with timber, range, and water activities.

Table 2.18 displays a summary of selected National Forest System outputs, activities, and costs. Appendix L displays more detailed information.

Table 2.18--Selected National Forest System Outputs, Activities and Costs--Alternative 5

	Units of Measure	1986	1990	2030
Energy Minerals Produced	Quads	8.8	8.1	4.5
Permitted Grazing	Million AUMs	8.6	8.1	7.2
Recreation, Wilderness, Wildlife Use	Million RVDs	214	207	215
Timber Offered	Billion Board Feet	8.7	8.1	8.1
Reforestation	Thousand Acres	276	269	255
Timber Purchaser Roads	Miles	6162	5470	5227
Total NFS Costs	Millions of 1982 Dollars	1583	1478	1460

State and Private Forestry

A significant reduction in outputs from the National Forests would increase pressures on State and private forest lands to meet demands for goods and services. However, all cooperative forestry assistance activities would be reduced and some eliminated under this alternative. Outputs from State and private forests attributable to Federal assistance would be much smaller than those projected in the 1980 Recommended Program or those under any other alternative. Any increased investments on State and private forest lands would result from State, local, and private initiatives rather than from Federally supported incentives or other assistance. This reduced Federal role would emphasize technical rather than financial assistance to State forestry agencies. Forest pest management assistance to Federal land managers would also be reduced.

Emphasis would be on suppression of only the most critical pest outbreaks, and prevention would be de-emphasized.

Table 2.19 displays a summary of selected State and Private Forestry outputs, activities, and costs. Appendix L displays more detailed information.

Table 2.19--Selected State and Private Forestry Outputs, Activities, and Costs--Alternative 5

	Units of Measure	1986	1990	2030
Reforestation	Thousand Acres	293	293	292
Timber Stand Improvement	Thousand Acres	142	142	143
Improved Wood Utilization	Million Cubic Feet	94	94	95
Statewide Forest Resource Planning	Person Years	61	61	61
Total S&PF Costs	Millions of 1982 Dollars	68	68	68

Research

This alternative assumes that approximately the same mix of research activities as is found in Alternative 1 would continue, but at a budget level about 25 percent less. Research to support the timber goal would receive the strongest emphasis. Some research, although at reduced funding, would be maintained under all opportunity areas. Cooperative research with universities and others would be reduced. All research initiatives in recreation, wilderness, range, and minerals would receive low emphasis.

The long-run productivity of the Nation's forests can be greatly increased by the development of new forest technology--new information, methodology and equipment. The Research emphasis at this funding level would provide very limited new technology, relative to identified research needs. The competitive position of the United States in many world timber markets would likely be weakened during the planning period. Also, critical new resource protection concerns, such as acid deposition, could only be addressed in the most elementary manner.

Table 2.20 displays a summary of Research costs by opportunity area. Appendix L displays more detailed information.

Table 2.20--Research Costs by Opportunity Area in Millions of 1982 Dollars--Alternative 5

Opportunity Area	1986	1990	2030
Water	6.0	5.8	5.8
Minerals	2.6	2.8	2.8
Range	2.6	3.0	3.0
Recreation	1.6	1.6	1.6
Wilderness	0.1	0.1	*
Timber	47.0	47.0	47.2
Wildlife/Fish	4.9	4.4	4.4
Protection	20.1	20.2	20.1
Total Research [1]	96.8	96.8	96.8

* Less than $50,000

[1] Includes construction and administrative costs not shown in the body of the table.

The international forestry funding level for Alternative 5 would be 25 percent less than Alternative 1--remaining at approximately $3 million through the entire planning period. Special efforts would be made to retain the work in international trade, as well as some other research, technical assistance, and training, directed primarily at tropical forestry problems in developing countries. The international forestry activities for NFS, S&PF, and Research would change very slowly during the 1986 to 2030 period as work is completed or replaced by higher priority items.

Alternative 6 (Implement Plans)

IMPLEMENT NATIONAL FOREST LAND AND RESOURCE MANAGEMENT PLANS, STATEWIDE FOREST RESOURCE PLANS, AND RESEARCH PROGRAM PLANS.

This alternative represents the preferred levels from National Forest planning and Statewide forest resource planning. Where National Forest land management planning information was not available, the 1980 Recommended Program for individual National Forests was substituted. For State and Private Forestry, Alternative 6 reflects the State/Federal cooperative activities needed to meet State goals as identified in Statewide forest resource plans. For Research, Alternative 6 approximates the 1980 RPA Program objectives. Resource outputs, activities, and costs are displayed in tables 2.21, 2.22, and 2.23.

National Forest System

Air, soil, and water quality would be protected and the goals fully met under this alternative. Incremental increased water yield would rise from 574,000 acre-feet in 1986 to 1,278,000 acre-feet in 2030.

Mineral exploration and development would be facilitated by timely processing of mineral permits. Equal emphasis would be placed on improvement of procedures to protect surface resources. Energy production would increase 37 percent, from 9.3 quads in 1986 to 12.7 quads in 2030.

Permitted grazing would increase seven percent to 10.7 million AUMs in 2030 from the 1986 level of 10.0 million AUMs. More than 76 percent of the allotments would be managed under a range analyses plan in 1986, and this would increase to 96 percent in 2030.

Recreation use would increase by 74 percent over the planning period, from 225 million RVDs in 1986 to 391 million RVDs in 2030. Seventy-nine percent of the recreation use would meet established quality and management standards.

Wilderness designations would increase from 34 million acres in 1986 to 38 million acres in 2030. Wilderness acres reflect the best information to date on the estimates recommended through the National Forest System's planning process.

The 1986 programmed timber sales offering of 11.9 billion board feet would be 6 percent above the volumes offered in Alternative 1, and would increase to 15.5 billion board feet by 2030. Increased timber production in 2030 would require about 52 percent more roads, for a total of about 10,440 miles.

Forest Service management objectives are met or exceeded, as well as recovery schedules for threatened, endangered, and sensitive species. Carrying capacity for species commonly hunted and fished would generally increase above the expected 1986 conditions. Commercial harvest level of anadromous fish is similar to Alternative 4, and would increase from 109 million pounds in 1986 to 178 million pounds in 2030. Total hunting, fishing, and related recreation use reported in all opportunity areas would increase from 40.1 million user days in 1986 to 51.4 million in 2030. For 1986, 13.1 million user days are produced from recreation management activities while 27 million are produced directly from wildlife activities or as a result of coordination with timber, range, or water management activities.

Table 2.21 displays a summary of selected National Forest System outputs, activities, and costs. Appendix L displays more detailed information.

Table 2.21--Selected National Forest System Outputs, Activities and Costs--Alternative 6

	Units of Measure	1986	1990	2030
Energy Minerals Produced	Quads	9.3	9.6	12.7
Permitted Grazing	Million AUMs	10.0	10.1	10.7
Recreation, Wilderness, Wildlife Use	Million RVDs	265	288	454
Timber Offered	Billion Board Feet	11.9	12.8	15.5
Reforestation	Thousand Acres	415	467	533
Timber Purchaser Roads	Miles	8915	9628	10441
Total NFS Costs	Millions of 1982 Dollars	2232	2573	2568

State and Private Forestry

Alternative 6, the State preferred program, was developed by aggregating the preferred alternative from each Statewide forest resource plan. Where State plans do not contain a preferred alternative, the data furnished by State Foresters for this alternative reflects the State/Federal cooperative needed to meet State forestry goals as identified in their plans. Forest pest management support on Federal lands for Alternative 6 is based on National Forest land management plans. Forest pest management activities would emphasize prevention and also satisfy suppression needs.

State and Private Forestry activities attributable to Federal assistance would be slightly lower than Alternatives 4 and 8 for the first decade and higher for the remainder of the planning period. Watershed protection and improvement activities would be notably higher than in Alternatives 4 and 8.

Cooperative reforestation and timber stand improvement activities at the Alternative 6 level would produce more than 4.5 billion cubic feet of increased softwood timber annually by 2030 (table 2.37), which is 279 percent greater than the increase expected under Alternative 1. A moderate increase in technical assistance to loggers and processors would encourage more complete and efficient use of wood. By 2030, an additional 261 million cubic feet of wood would be made available annually, which is almost double the increase under Alternative 1.

Table 2.22 displays a summary of selected State and Private Forestry outputs, activities, and costs. Appendix L displays more detailed information.

Table 2.22--Selected State and Private Forestry Outputs, Activities, and Costs--Alternative 6

	Units of Measure	1986	1990	2030
Reforestation	Thousand Acres	729	954	1061
Timber Stand Improvement	Thousand Acres	417	509	633
Improved Wood Utilization	Million Cubic Feet	135	223	261
Statewide Forest Resource Planning	Person Years	93	147	164
Total S&PF Cost	Millions of 1982 Dollars	119	207	268

Research

Research Alternatives 6 and 8 are the same and provide the highest levels of support for the long-run resource needs identified in the 1979 Assessment and Assessment Supplement. These alternatives seek to achieve the goals outlined in National Forest and State forest resource planning. Significantly increased budgets would permit a well balanced program and major progress would be made in both market and nonmarket research areas. Due to the balance of the research activities, coordination with research efforts in most of the Nation's forestry schools would be facilitated.

Major breakthroughs could also be anticipated in biotechnology and genetic engineering for several species. By 1990, the forest inventory cycle would be reduced to an average of 8 years in the South with other specific State and subregional intervals being dictated by the extent of changes in forest conditions. Major breakthroughs could also be expected in efforts to link economic models which estimate timber demand with those that estimate timber supply.

Significant useful information could be expected from range research and the interrelationships of trees, livestock, and wildlife. Wildlife research would emphasize needs of threatened and endangered species, and nongame species as well as game animal habitat needs.

Major progress would be made in assessing the effects of acid deposition on forest ecosystems. Research on water yield, water quality, and aquatic habitat would provide significant support in meeting the expected demands on the Nation's water resources.

Table 2.23 displays a summary of Research costs by opportunity area. Appendix L displays more detailed information.

Table 2.23--Selected Research Costs by Opportunity Area, in Millions of 1982 Dollars--Alternative 6

Opportunity Area	1986	1990	2030
Water	9.4	13.3	19.4
Minerals	4.6	6.2	8.8
Range	4.2	6.1	8.5
Recreation	4.2	5.6	7.5
Wilderness	0.7	0.9	1.0
Timber	73.4	101.6	146.8
Wildlife/Fish	7.2	9.7	14.6
Protection	29.5	42.4	60.1
Total Research [1]	154.5	214.9	310.0

[1] Includes construction and administrative costs not shown in the body of the table.

International forestry activities for NFS, S&PF, and Research for Alternatives 6 and 8 would be at the highest funding levels over the planning period--$20 million in 2030 as compared to $4.5 million in 1986. At this level, the projected activities show an increase in technical assistance and training from about 36 percent of the current level to 50 percent in 2030. These changes in emphasis are more in line with the projected needs.

International forestry research would include a high level of effort in the development of new information for forest managers on the silviculture of both planted and natural forests; endangered species; soil erosion and water quality; fuelwood plantations; and ecological relationships of soil, water, and climate. Research on international trade would be directed toward providing information necessary to improve the U.S. export position. Technical assistance and training would include work with both developed and developing countries. The Associate Experts program would be initiated early and expanded as rapidly as feasible to train staff for multilingual as well as technical and social capabilities.

Alternative 7 (High Present Net Value)

PROVIDE RESOURCE OUTPUTS AT ECONOMICALLY EFFICIENT LEVELS, SUBJECT TO MEETING MINIMUM LEGAL REQUIREMENTS AND PROTECTING COMMUNITY STABILITY.

This alternative has the highest present net value of resource production subject to meeting the constraints of providing minimum levels of market outputs necessary to maintain social and economic stability of dependent communities; of sustaining established National Forest-dependent industries at recent levels; and of providing for nonpriced multiple use and environmental objectives necessary to meet minimum legal standards and resource integration requirements. Resource outputs, activities, and costs are displayed in tables 2.24, 2.25, and 2.26.

National Forest System

Air, soil, and water quality would be fully protected under this alternative. Incremental water yield would increase from 606,000 acre-feet in 1986 to 1,253,000 acre-feet in 2030.

Mineral exploration and development would be facilitated by timely processing of minerals permit applications. Equal emphasis would be placed on improvement of procedures to protect surface resources. Energy produced would increase from 9.4 quads in 1986 to 12.1 quads in 2030.

Permitted grazing would decrease slightly from the 1986 level of 9.9 million AUMs to 9.7 million AUMs in 2030. More than 76 percent of the allotments would be managed under a plan based on range analyses in 1986, increasing to 96 percent in 2030.

Recreation use would increase about 85 percent from 225 million recreation visitor days in 1986 to 417 million by 2030. More than 975 miles of forest trails would be constructed or reconstructed in 1986. More than 70 percent of the RVDs would meet established management standards in 1986.

National Forest System land in the National Wilderness Preservation System would increase from 34 million acres in 1986 to 39 million in 2030.

The programmed timber sales offered in 1986 would be 12.2 billion board feet, 9 percent above the volume offered in Alternative 1. Timber offered would increase to 14.6 billion board feet by 2030. In 1986, road construction and reconstruction would total 8,410 miles.

Forest Service management objectives are generally met, as well as recovery schedules for threatened, endangered, and sensitive species. Carrying capacity for species commonly hunted and fished would increase 5 to 10 percent. Commercial harvest of anadromous fish increases from 109 million pounds in 1986 to 176 million in 2030. Total hunting, fish, and related recreation use reported in all opportunity areas would increase from 40.3 million user days in 1986 to 49.3 million in 2030. For 1986, 12.3 million user days are produced from recreation management activities while 27 million are produced directly from wildlife activities or as a result of coordination with timber, range, and water management activities.

Table 2.24 displays a summary of selected National Forest System outputs, activities, and costs. Appendix L displays more detailed information.

Table 2.24--Selected National Forest System Outputs, Activities and Costs--Alternative 7

	Units of Measure	1986	1990	2030
Energy Minerals Produced	Quads	9.4	9.6	12.1
Permitted Grazing	Million AUMs	9.9	9.8	9.7
Recreation, Wilderness, Wildlife Use	Million RVDs	265	289	479
Timber Offered	Billion Board Feet	12.2	12.9	14.6
Reforestation	Thousand Acres	417	451	490
Timber Purchaser Roads	Miles	8410	9177	9617
Total NFS Costs	Millions of 1982 Dollars	2176	2462	2414

State and Private Forestry

The State and Private Forestry activities in Alternative 7 include those where benefits would be cost effective, based on real rates of return. The most cost-effective opportunities based on the results of recent cost-effectiveness studies such as the analysis of the 1979 Forestry Incentives Program (FIP) and the Cooperative Fire analyses are captured here. Nationally, Alternative 7 outputs from State and private forests attributable to Federal assistance would be slightly lower than the 1980 RPA Program. However, the level of Alternative 7 varies regionally, and would be determined by timber site productivity. In the South, the Pacific Coast States, and in parts of the Northeast, Alternative 7 would be similar to the higher level alternatives, while in the Rocky Mountain and Plains States it would be similar to current activities.

Cooperative reforestation and timber stand improvement activities in Alternative 7 would produce more than 4.7 billion cubic feet of increased softwood timber annually by 2030 (table 2.37), which is almost three times the increase under Alternative 1. A moderate increase in technical assistance to loggers and processors would encourage more complete and efficient use of wood. By 2030, an additional 270 million cubic feet of wood would be made available annually, which is more than double the increase under Alternative 1. More technical assistance for soil and water resources would be provided as timber management activity increased. Watershed improvement projects would increase moderately.

Table 2.25 displays a summary of selected State and Private Forestry outputs, activities, and costs. Appendix L displays more detailed information.

Table 2.25--Selected State and Private Forestry Outputs, Activities, and Costs--Alternative 7

	Units of Measure	1986	1990	2030
Reforestation	Thousand Acres	604	1005	1108
Timber Stand Improvement	Thousand Acres	438	609	719
Improved Wood Utilization	Million Cubic Feet	139	247	270
Statewide Forest Resource Planning	Person Years	88	150	157
Total Cost - S&PF	Millions of 1982 Dollars	117	167	198

Research

Research planned for Alternative 7 would provide a moderate to high level of support to meet long-term forest resource and protection needs. It would be oriented toward improving the cost effectiveness of those activities which facilitate the movement of goods and services from the forest to the consumer. Examples of this research orientation would be: research to increase site productivity; range research which emphasizes the development of cost-effective management practices needed for increasing carrying capacity; and improvement of processing techniques to yield greater volumes of finished wood products from given roundwood supplies.

Research funding would offer moderate to high level support for water, mineral, range, timber, wildlife and fish, and protection goals. Funding for recreation and wilderness research would provide moderate support for these goals. High emphasis would be given to selected initiatives in water, timber, and protection, including work on acid deposition questions, remote sensing technology, intensive timber culture and integrated pest management.

Table 2.26 displays a summary of Research costs by opportunity area. Appendix L displays more detailed information.

Table 2.26--Research Costs by Opportunity Area in Millions of 1982 Dollars--Alternative 7

Opportunity Area	1986	1990	2030
Water	8.1	11.8	13.0
Minerals	4.2	5.4	9.5
Range	3.9	5.9	8.4
Recreation	2.4	3.3	5.4
Wilderness	0.3	0.3	0.5
Timber	65.8	96.0	134.2
Wildlife/Fish	6.5	9.3	13.2
Protection	28.7	41.4	51.0
Total Research [1]	139.0	201.0	276.4

[1] Includes construction and administrative costs not shown in the body of the table.

The international forestry funding would provide for a moderately high level of effort at $6.1 million in 1986, increasing to $14.9 million in 2030. This level would contribute significantly to many forestry needs in tropical and developing countries.

Research would develop important information on ways to improve U.S. timber trade. Work on factors restricting trade would be completed as well as work on the insect and disease transmission problems in the timber trade. Technical assistance and training would make good progress on the forestry problems faced by developing countries. The Associate Experts program would begin to provide a significant cadre of Forest Service experts in international forestry by 2030--one with multilingual (as well as technical and social) capabilities.

Alternative 8 (1980 RPA)

IMPLEMENT THE 1980 RPA PROGRAM DIRECTION.

This alternative emphasizes Forest Service management direction to meet the objectives of the 1980 RPA Program. This is the alternative of taking no action to revise existing RPA planning direction. This emphasis would be achieved by managing all resources at a high level while maintaining the productivity of the land. See the 1980 RPA Recommended Program for a detailed description. Resource outputs, activities, and costs are displayed in tables 2.27 and 2.28.

National Forest System

Air, soil, and water quality goals would be fully met under this alternative. Increased water yields would rise from 685,000 acre-feet in 1986 to about 1.3 million by 2030.

Mineral exploration and development would continue at a level comparable with Alternative 3. In 2030, energy mineral production would increase to 13 quads. Management emphasis would be on protection of surface resources and mitigation of adverse environmental impacts.

This alternative is similar to Alternatives 4 and 6 for range grazing and provides for an increase of permitted grazing. Grazing use would be scheduled to increase 9 percent, from 10.0 million AUMs in 1986 to 10.9 million AUMs in 2030.

Recreation use would increase from 230 million RVDs in 1986 to 387 million in 2030. Recreation use in 1986 would be nearly 7 percent greater than the current level. About 1,100 miles of forest trails would be constructed or reconstructed in 1986. More than 75 percent of the recreation use would be at established quality standards.

National Forest System lands in the National Wilderness Preservation System would increase more than 17 percent from 34 million acres in 1986 to 41 million acres in 2030. Wilderness estimates are about the same as the 1980 RPA targets.

Alternative 8 calls for 12.4 billion board feet of timber to be offered in 1986, 11 percent above the current level. The annual sale offering in 2030 would be 15.4 billion board feet, 44 percent above the 1982 level, and would require about 10,100 miles of roads, a 47-percent increase over the current level.

Forest Service management and recovery objectives for threatened, endangered, and sensitive wildlife and fish species are met or exceeded. Carrying capacity for species commonly hunted and fished would generally increase by 5 to 10 percent over current levels by 2030. Total hunting, fishing, and related recreation use reported in all opportunity areas increases from 40.3 million user days in 1986 to 51.6 million in 2030. For 1986, 13.3 million user days are produced from recreation management activities while 27 million are produced directly from wildlife activities or as a result of coordination with timber, range, or water management activities.

Table 2.27 displays a summary of selected National Forest System outputs, activities, and costs. Appendix L displays more detailed information.

Table 2.27--Selected National Forest System Outputs, Activities, and Costs--Alternative 8

	Units of Measure	1986	1990	2030
Energy Minerals Produced	Quads	9.4	9.6	12.6
Permitted Grazing	Million AUMs	10.0	10.2	10.9
Recreation, Wilderness, Wildlife Use	Million RVDs	269	295	449
Timber Offered	Billion Board Feet	12.4	13.1	15.4
Reforestation	Thousand Acres	435	471	508
Timber Purchaser Roads	Miles	8819	9560	10078
Total NFS Costs	Millions of 1982 Dollars	2267	2600	2563

State and Private Forestry

The State and Private Forestry activities for Alternative 8 are the same as those displayed in Alternative 4, except for forest pest management activities on NFS lands. These activities are higher in Alternative 4 because National Forest timber outputs in that alternative exceed the 1980 RPA Program.

Table 2.28 displays a summary of selected State and Private Forestry outputs, activities, and costs. Appendix L displays more detailed information.

Table 2.28--Selected State and Private Forestry Outputs, Activities, and Costs--Alternative 8

	Units of Measure	1986	1990	2030
Reforestation	Thousand Acres	768	852	1134
Timber Stand Improvement	Thousand Acres	484	693	1042
Improved Wood Utilization	Million Cubic Feet	126	226	272
Statewide Forest Resource Planning	Person Years	86	221	76
Total Cost - S&PF	Millions of 1982 Dollars	142	223	241

Research

The Research and international forestry activities are the same as those displayed in Alternative 6.

Alternative 9 (High Productivity)

HIGH PRODUCTIVITY OF MARKET OUTPUTS WITH EMPHASIS ON TIMBER PRODUCTION.

The objective of this alternative is to produce all market outputs that are economically viable. It assumes that: 1) grazing fees will increase; 2) the current recreation user fee system will change; and 3) increased revenues will be available for recreation management purposes, including wilderness and wildlife use. This means that these resources are part of the market emphasis of this alternative. Production of nonmarket outputs will be at economically efficient levels consistent with the high market resource emphasis.

Constraints on timber activities would be relaxed to lower timber costs. Legal requirements such as those for air and water quality, threatened and endangered species, and soil productivity would be met. The levels of road construction, visual quality objectives, and regulatory standards (such as size of clearcuts and dispersion of timber sales) would be relaxed. Technology to reforest productive lands would be available for most forest types by 2000; tentatively suitable lands would be adjusted accordingly.

Increased revenues from recreation use would equal 40 percent of the recreation costs in 1990 and 60 percent in 2030. These revenues would be returned to the collecting unit to be reinvested for recreation purposes. The limit of 60 percent is assumed because some costs are not reasonable for the user to bear. These costs would include the basic management costs required regardless of visitor use and certain other types of recreation use. Resource outputs and activities are displayed in tables 2.29, 2.30, and 2.31.

National Forest System

The minimum requirements for air, soil, and water would be met and in some cases exceeded under this alternative. Increased water yield ranges from 660,000 acre-feet in 1986 to about 2.1 million acre-feet in 2030.

Mineral exploration and development would be facilitated by timely processing of applications. Energy produced would increase 52 percent by 2030, from 9.5 quads in 1986 to 14.4 quads in 2030.

Permitted grazing on NFS lands would increase from 10.2 million AUMs in 1986 to 12.2 million in 2030. About 76 percent of the allotments in 1986 would be managed with a plan based on completed range analyses. This level would increase to 96 percent in 2030.

By 2030, recreation use would reach 415 million RVDs, a 75-percent increase from 1982 levels. Motorized recreation use would increase; roadless recreation opportunities would be reduced. By 2030, 96 percent of the recreation use would meet established management standards.

Wilderness acres range from approximately 33 million in 1986 to 35 million acres in 2030.

Alternative 9 has the highest timber outputs and high output levels of other market resources. It would have a 43-percent increase in the amount of timber offered by 1990; by 2030, 103 percent more timber would be offered annually compared to 1982 levels. Annual sale offerings would range from 13.6 billion board feet in 1986 to 21.8 billion by 2030. The increase in timber sale offerings would require about 43 percent more miles of road annually by 1990 as compared with Alternative 1. By 2030, 12,000 miles of road would be required, a 75-percent increase over current levels.

Alternative 9 does not meet management or recovery objectives for threatened, endangered, and sensitive species. The carrying capacity for species commonly hunted and fished would generally decrease 20 to 40 percent from current levels by 2000. The 175 million pounds of commercial fish harvested in 2030 represents a 65-percent increase from the 1982 level. Total hunting, fishing and related recreation use reported in all opportunity areas increases from 39.3 million user days in 1986 to 50.7 million in 2030. For 1986, 12.3 million user days are produced from recreation management activities while 27 million are directly produced from wildlife activities or as a result of coordination with timber, range, and water management activities.

Table 2.29 displays a summary of selected National Forest System outputs, activities, and costs. Appendix L displays more detailed information.

Table 2.29--Selected National Forest System Outputs, Activities and Costs--Alternative 9

	Units of Measure	1986	1990	2030
Energy Minerals Produced	Quads	9.5	10.2	14.4
Permitted Grazing	Million AUMs	10.2	10.7	12.2
Recreation, Wilderness, Wildlife Use	Million RVDs	253	275	475
Timber Offered	Billion Board Feet	13.6	15.9	21.8
Reforestation	Thousand Acres	458	598	811
Timber Purchaser Roads	Miles	8812	10704	11993
Total NFS Costs	Millions of 1982 Dollars	2311	2760	3023

State and Private Forestry

The State and Private Forestry activities for Alternative 9 is the same as those displayed in Alternative 7, except for forest pest management activities on NFS lands, which are commensurate with the higher NFS timber output level in Alternative 9.

Table 2.30 displays a summary of selected State and Private Forestry outputs, activities, and costs. Appendix L displays more detailed information.

Table 2.30 -- Selected State and Private Forestry Outputs, Activities, and Costs--Alt. 9

	Units of Measure	1986	1990	2030
Reforestation	Thousand Acres	604	1005	1108
Timber Stand Improvement	Thousand Acres	438	609	719
Improved Wood Utilization	Million Cubic Feet	139	247	270
Statewide Forest Resource Planning	Person Years	88	150	157
Total S&PF Cost	Millions of 1982 Dollars	121	177	207

Research

This alternative emphasizes research needed to support planned increases in NFS timber outputs. Other ownerships would benefit from the research results, but the research focus would be toward maximizing NFS timber production. Planned research would provide mixed support for needs stated in the Assessment due to the strong orientation toward timber production and related market outputs.

Major research emphasis would be placed on harvesting, processing, and marketing. Accelerated activities would be initiated for the marketing of pole-size timber and logging residues. Accelerated harvesting research would develop technology to harvest and transport pole-size timber currently inaccessible for economic reasons. Research to improve forest management systems would be emphasized nationally, with priority given to the National Forest System needs.

Protection research (insects, diseases, and fire) would be accelerated. The emphasis on fire research would be shifted from protection of life and property to prescribed burning for intensive timber management and protection of timber investments from fire.

Multiresource evaluation, wildlife habitat, and outdoor recreation research would primarily seek to ameliorate the potentially negative impacts of increased timber outputs on other resources. Research on acid deposition would concentrate its efforts on commercially important timber species. Research not directly related to increasing timber production or ameliorating its effects would generally continue at or below current budget levels.

Table 2.31 displays a summary of Research costs by opportunity area. Appendix L displays more detailed information.

Table 2.31--Research Costs by Opportunity Area in Millions of Dollars--Alternative 9

Opportunity Area	1986	1990	2030
Water	9.3	12.5	14.7
Minerals	4.3	4.2	5.0
Range	4.4	6.4	8.3
Recreation	2.3	2.3	2.5
Wilderness	0.2	*	0.1
Timber	78.2	92.2	113.0
Wildlife/Fish	7.0	8.5	11.0
Protection	31.7	34.7	41.2
Total Research [1]	156.8	184.7	223.8

*Less than $50,000.
[1] Includes construction and administrative costs not shown in the body of the table.

The international forestry activities for Alternative 9 are the same as those for Alternative 2.

COMPARISON TABLES

TABLE 2.32 . . . . . NATIONAL FOREST SYSTEM

TABLE 2.33 . . . . . STATE AND PRIVATE FORESTRY

TABLE 2.34 . . . . . RESEARCH

TABLE 2.32 -- NATIONAL FOREST SYSTEM PROGRAM: NATIONAL SUMMARY BY ALTERNATIVE, 1986, 1990, and 2030

INDICATOR	UNIT OF MEASURE 2/	RECOMMENDED PROGRAM						ALTERNATIVE 1			ALTERNATIVE 2			ALTERNATIVE 3		
		Low Bound			High Bound			Constant			Market			Nonmarket		
		1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
WATER-MINERALS																
INCREASED WATER YIELD	THOUS AF	418	418	1350	418	629	1555	557	597	896	658	925	1851	493	579	1026
ENERGY MINERALS PRODUCED	QUADS	9.3	9.3	12.3	9.3	9.7	13.0	9.1	9.1	9.0	9.5	10.1	14.1	9.1	9.2	9.9
NONENERGY MINERALS PROD	MILLION $	2111	2111	3473	2111	2517	3925	2000	2122	2466	2207	2685	3991	1991	2434	3482
RANGE																
PERMITTED GRAZING	MIL AUM	9.8	9.8	10.3	9.8	9.8	11.3	9.8	9.7	9.7	10.2	10.7	13.3	9.7	9.5	9.5
IMPROVED RANGE ALLOTMENTS	PERCENT	75	71	87	75	87	96	74	83	94	76	91	96	74	83	89
RECREATION-WILDERNESS																
RECREATION USE	MIL RVD	215	216	340	215	233	400	214	215	218	214	237	371	227	254	438
WILDERNESS USE	MIL RVD	10	12	19	10	15	25	12	13	16	11	14	20	15	17	27
WILDERNESS MGMT	MIL ACRES	32	35	35	32	37	40	34	34	34	33	33	35	34	39	43
TRAIL CONST/RECONST	MILES	755	502	2100	755	4470	2215	599	697	616	684	923	1069	1475	2270	2308
TIMBER																
TIMBER OFFERED	BIL BF	11.4	9.0	15.6	11.4	11.6	20.0	11.2	11.1	10.5	13.6	15.0	19.7	10.4	10.5	12.0
TIMBER OFFERED	BIL CF	2.1	1.8	3.1	2.1	2.2	3.9	2.1	2.1	2.1	2.5	2.8	3.9	1.9	2.0	2.4
FUELWOOD	MIL CF	254	261	250	254	277	265	226	228	216	250	275	289	242	260	263
REFORESTATION	THOUS ACRES	346	335	570	346	426	600	376	380	361	457	561	730	371	379	397
TIMBER STAND IMP	THOUS ACRES	334	302	600	334	404	632	351	351	358	476	548	783	366	370	417
WILDLIFE/FISH																
WILDLIFE AND FISH USE	MIL WFUD	23	20	28	23	28	40	26	25	26	26	28	35	28	31	43
ANADROMOUS FISH COMMERCIAL HARVEST	MIL POUNDS	106	103	135	106	114	177	110	110	110	109	117	170	107	114	150
PROTECTION/SUPPORT																
FIRE MANAGEMENT EFFECTIVENESS INDEX	$/THOU PROT ACRES	2158	2400	1600	2158	1832	1600	1874	1817	1795	1766	1651	1576	1740	1654	1595
TIMBER PURCHASER ROAD CONST/RECONST	MILES	6758	6037	9496	6758	8592	11240	7667	7502	7279	9206	10706	12448	7214	7656	8055
ARTERIAL/COLLECTOR ROAD CONST/RECONST	MILES	1004	842	3404	1004	2704	4030	2436	2518	2279	3323	3854	4502	2744	3071	3288
HUMAN RESOURCES PROG	THOUS PERSON YRS	9.8	5.6	9.5	9.8	9.4	9.5	6.0	6.0	6.0	8.8	8.9	9.0	9.4	9.3	9.5
COSTS																
OPERATIONAL	MILLION $	786	760	1237	786	1040	1278	939	946	953	1049	1160	1376	1048	1118	1292
CAPITAL INVESTMENT	MILLION $	723	626	1341	723	1008	1373	970	987	871	1243	1515	1465	1059	1251	1077
TOTAL-NFS	MILLION $	1509	1386	2578	1509	2048	2651	1909	1933	1825	2292	2675	2841	2107	2369	2369
ALLOCATED	MILLION $	157	175	296	157	221	231	190	193	168	277	398	305	252	345	207
APPROPRIATED	MILLION $	1352	1211	2282	1352	1827	2420	1719	1740	1657	2015	2277	2536	1855	2024	2162

1/ ABBREVIATIONS: BIL = Billion, MIL = Million, THOUS =Thousand, IMP = Improvement, PROT = Protected, YRS = Years, BF = Board Feet, CF = Cubic Feet, AUM = Animal Unit Months, PROD = Production, PROG = Program, RVD = Recreation Visitor Days, WFUD = Wildlife and Fish User Days, MGMT = Management, AF = Acre Feet, QUADS = One Quadrillion BTU (British Thermal Units), CONST = Construction, RECONST = Reconstruction

* Indicates no data available

ALTERNATIVE 3A			ALTERNATIVE 4			ALTERNATIVE 5			ALTERNATIVE 6			ALTERNATIVE 7			ALTERNATIVE 8			ALTERNATIVE 9		
High Wilderness			All Resources			Reduced			Implemented Plans			High PNV			1980 RPA			High Productivity		
1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
492	578	1025	654	796	1524	405	441	588	574	696	1278	606	716	1253	685	794	1339	658	926	2112
9.1	9.2	9.9	9.4	9.6	13.2	8.8	8.1	4.5	9.3	9.6	12.7	9.4	9.6	12.1	9.4	9.6	12.6	9.5	10.2	14.4
1991	2434	3482	2190	2719	3928	1947	1946	1993	2106	2615	3912	2127	2643	3810	2073	2548	3758	2208	2686	3992
9.7	9.5	9.4	10.0	10.2	10.9	8.6	8.1	7.2	10.0	10.1	10.7	9.9	9.8	9.7	10.0	10.2	10.9	10.2	10.7	12.2
74	83	89	76	88	96	74	78	83	76	89	96	75	86	96	76	89	96	76	91	96
227	254	437	225	249	417	180	173	181	225	244	391	225	245	417	230	251	387	214	233	415
17	19	32	13	15	24	11	12	14	13	15	24	13	15	23	12	15	21	12	14	22
34	39	52	34	38	39	33	33	33	34	37	38	34	35	39	37	39	41	33	33	35
1496	2291	2494	1030	1651	1755	343	342	348	1135	1647	1807	975	1401	1489	1139	1833	1708	1069	1383	1535
10.3	10.5	12.0	13.3	14.6	17.4	8.7	8.1	8.1	11.9	12.8	15.5	12.2	12.9	14.6	12.4	13.1	15.4	13.6	15.9	21.8
1.9	2.0	2.4	2.5	2.8	3.4	1.6	1.5	1.6	2.2	2.4	3.1	2.3	2.4	2.9	2.3	2.5	3.0	2.5	3.0	4.3
242	259	263	268	294	253	182	178	177	258	281	285	265	282	292	264	289	292	250	275	301
370	378	396	453	546	601	276	269	255	415	467	533	417	451	490	435	471	508	458	598	811
364	369	416	435	513	633	253	224	238	391	481	566	380	422	517	416	463	586	480	603	906
28	30	43	27	30	39	23	22	20	27	29	39	27	29	39	27	29	41	27	28	38
107	114	150	110	118	172	104	104	104	109	120	178	109	118	176	107	115	195	109	118	175
1740	1654	1595	1751	1654	1584	2158	2183	2177	1735	1616	1568	1740	1641	1576	1762	1633	1575	1721	1610	1567
7195	7631	8033	9017	10555	11242	6162	5470	5227	8915	9628	10441	8410	9177	9617	8819	9560	10078	8812	10704	11993
2732	3057	3275	3024	3573	4032	1646	1491	1639	2940	3370	3522	2819	3254	3257	2850	3338	3543	3250	3860	4162
9.4	9.3	9.5	9.4	9.5	9.6	13.5	13.5	13.5	9.5	9.6	9.9	8.9	8.9	9.0	9.6	8.9	8.8	8.8	8.6	8.7
1048	1117	1291	1077	1176	1346	865	833	864	1058	1156	1327	1042	1119	1272	1076	1170	1337	1073	1218	1491
1056	1247	1075	1216	1515	1329	717	646	596	1174	1416	1241	1134	1343	1142	1191	1430	1226	1238	1541	1532
2104	2364	2366	2292	2691	2675	1583	1478	1460	2232	2573	2568	2176	2462	2414	2267	2600	2563	2311	2760	3023
252	345	206	276	384	266	207	194	200	266	370	245	268	367	237	280	392	239	276	403	329
1852	2019	2160	2016	2307	2409	1376	1284	1260	1966	2203	2323	1908	2095	2177	1987	2208	2324	2035	2357	2694

TABLE -- 2.33 - STATE AND PRIVATE FORESTRY PROGRAM: NATIONAL SUMMARY BY ALTERNATIVE, 1986, 1990, and 2030

INDICATOR	UNIT OF MEASURE 2/	RECOMMENDED PROGRAM						ALTERNATIVE 1			ALTERNATIVE 2			ALTERNATIVE 3		
		Low Bound			High Bound			Constant			Market			Nonmarket		
		1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
WATER																
IMPROVED WATERSHED CONDITION	THOUS ACRES	7	6	328	7	116	328	25	23	24	44	381	464	98	96	100
TIMBER																
MANAGEMENT PLANS	THOUS ACRES	2817	2192	7736	2817	4488	7736	4371	4354	4098	4770	10376	12705	3989	4495	6301
DISPERSED RECREATION	THOUS ACRES	82	60	386	82	146	386	115	116	115	391	843	888	119	164	224
WILDLIFE HABITAT IMP	THOUS ACRES	154	116	556	154	322	556	236	236	234	300	692	847	357	609	730
MAINTAINED WATERSHED CONDITION	THOUS ACRES	437	350	4094	437	1956	4094	1428	1429	1420	1356	5252	5855	1317	2109	2189
REFORESTATION (RFA, FIP, ACP)	THOUS ACRES	403	323	1061	403	866	1061	403	403	402	766	1291	1380	601	637	779
TIMBER STAND IMP. (RFA, FIP, ACP)	THOUS ACRES	195	156	633	195	438	633	195	196	197	576	1001	1113	387	493	712
IMPROVED WOOD UTILIZATION	MIL CF	88	64	250	88	145	250	129	132	132	136	292	324	124	172	217
PROGRAM DEVELOPMENT AND MGMT. DEVELOPMENT																
STATE FOREST RESOURCE PLANNING	PERSON YEARS	55	44	129	55	51	129	80	80	81	99	183	191	80	149	75
FOREST PEST MANAGEMENT																
FPM-SURVEY & TECHNICAL ASSISTANCE (S&PF LANDS)	MIL ACRES	411	35	438	411	326	438	355	355	361	429	511	585	361	438	464
FPM-SURVEYS ON NFS AND OTHER FEDERAL LANDS	MIL ACRES	144	135	185	144	161	185	128	126	126	144	182	192	131	135	142
COOPERATIVE FIRE PROTECTION																
PROTECTION COST PLUS LOSS	$ PER ACRE	.89	.87	.87	.89	.87	.87	.89	.70	.70	.89	.87	.87	.89	.78	.78
COSTS																
OPERATIONAL	MILLION $	12	5	15	12	12	16	10	10	10	14	29	34	11	14	15
CAPITAL INVESTMENT	MILLION $	58	17	71	58	109	163	80	79	79	133	225	249	106	144	155
TOTAL-S&PF	MILLION $	70	22	86	70	121	179	90	90	90	148	254	283	118	158	170
ALLOCATED 1/	MILLION $	22	0	22	22	47	65	22	22	22	63	76	80	45	49	55
APPROPRIATED	MILLION $	48	22	64	48	74	114	68	68	68	85	179	203	73	108	115

1/ Includes FIP, ACP, and RCFP, all of which are capital investment.

2/ ABBREVIATIONS: THOUS = Thousand, MIL = MILLION, CF = Cubic Feet, IMP = Improvement, RFA = Rural Forestry Assistance, FIP = Forestry Incentives Program, ACP = Agricultural Conservation Program, NFS = National Forest System, RCFP= Rural Community Fire Protection

ALTERNATIVE 3A High Wilderness			ALTERNATIVE 4 All Resources			ALTERNATIVE 5 Reduced			ALTERNATIVE 6 Implement Plans			ALTERNATIVE 7 High PNV			ALTERNATIVE 8 1980 RPA			ALTERNATIVE 9 High Productivity		
1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
98	96	100	84	152	203	10	8	10	98	312	365	113	265	312	84	152	203	113	265	312
3989	4495	6301	3836	5173	8102	3113	3100	2908	4174	6354	8114	5052	7943	9082	3836	5173	8102	5052	7943	9082
119	164	224	127	280	514	85	85	85	185	363	398	338	746	787	127	280	514	338	746	787
357	609	730	343	1228	1661	170	170	169	239	442	583	270	536	679	343	1228	1661	270	536	679
1317	2109	2189	2062	3928	4361	738	739	732	1857	4265	5508	1885	4736	5256	2062	3928	4361	1885	4736	5256
601	637	779	768	852	1134	293	293	292	729	954	1061	604	1005	1108	768	852	1134	604	1005	1108
387	493	712	484	693	1042	142	142	143	417	509	633	438	609	719	484	693	1042	438	609	719
124	172	217	126	226	272	94	94	95	135	223	261	139	247	270	126	226	272	139	247	270
80	149	75	86	221	76	61	61	61	94	147	164	88	150	157	86	221	76	88	150	157
361	438	464	393	494	528	231	231	231	411	517	563	390	441	460	393	494	528	390	441	460
131	135	142	133	148	157	91	91	91	139	158	167	133	153	162	130	148	158	142	170	185
.89	.78	.78	.89	.87	.87	.89	.70	.70	.89	.87	.87	.89	.71	.70	.89	.87	.87	.89	.71	.70
11	14	15	12	18	18	8	8	8	14	29	29	12	14	15	12	18	18	13	18	17
106	144	155	133	206	223	60	60	60	105	178	239	105	153	183	130	206	223	109	159	190
118	158	170	145	223	241	68	68	68	119	207	268	117	167	198	142	223	241	121	177	207
45	49	55	66	76	83	17	17	17	39	49	65	42	48	67	66	76	83	42	48	67
73	108	115	78	147	158	52	52	52	80	157	203	75	119	131	76	148	159	80	129	140

TABLE 2.34 -- RESEARCH PROGRAM NATIONAL SUMMARY: BY ALTERNATIVE, 1986, 1990, and 2030

INDICATOR	RECOMMENDED PROGRAM						ALTERNATIVE 1			ALTERNATIVE 2			ALTERNATIVE 3, 3A		
	Low Bound			High Bound			Constant			Market			Nonmarket		
	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
	MILLIONS OF 1982 DOLLARS														
WATER	8.9	7.9	10.4	8.9	8.6	11.0	8.4	8.5	8.1	8.6	11.7	14.8	9.3	10.3	16.5
WATERSHED	7.6	6.6	8.7	7.6	7.2	9.2	7.7	7.8	7.1	7.8	10.5	13.0	8.5	9.4	14.8
SOILS	1.3	1.3	1.7	1.3	1.4	1.8	.7	.7	1.0	.9	1.2	1.8	.8	1.0	1.7
MINERALS	3.2	2.6	3.5	3.2	2.9	4.2	3.6	3.6	4.7	4.3	5.8	7.5	4.3	4.7	7.2
RANGE	2.0	2.1	2.8	2.0	2.5	3.1	3.2	3.2	3.7	4.5	6.6	8.5	3.5	4.3	6.5
RECREATION	1.4	1.5	3.3	1.4	2.4	4.6	2.2	2.2	2.4	1.9	2.8	3.9	4.4	5.1	9.1
FOREST RECREATION	.6	.7	1.8	.6	1.2	2.8	1.1	1.1	1.4	1.0	1.7	2.2	2.3	2.9	4.7
URBAN FORESTS	.8	.9	1.5	.8	1.2	1.8	1.1	1.1	1.0	.9	1.2	1.7	2.1	2.3	4.5
WILDERNESS	.3	.3	.8	.3	.6	1.0	.2	.2	.5	.2	.3	.3	.5	1.1	1.8
TIMBER	48.9	47.4	67.7	48.9	56.6	82.8	61.3	61.1	60.1	69.0	93.1	119.5	62.9	72.7	111.5
INVENTORY	10.4	6.9	10.2	10.4	8.5	12.7	10.6	10.5	10.6	11.5	15.4	20.0	10.9	12.1	19.4
EVALUATION	3.0	1.9	3.0	3.0	2.4	3.5	1.5	1.6	1.9	2.4	3.1	3.7	2.6	2.7	3.5
BIOLOGY	15.3	16.0	21.9	15.3	18.4	25.8	19.3	19.2	19.3	21.0	28.0	37.6	19.8	22.9	35.7
GENETICS	2.3	4.0	5.3	2.3	4.4	6.5	5.1	5.1	4.8	5.1	7.1	8.9	4.0	4.6	7.5
PRODUCTION ECONOMICS	1.8	2.1	2.7	1.8	2.4	3.7	2.3	2.4	1.9	2.8	4.0	5.0	2.2	2.8	3.9
HARVESTING	2.1	1.9	3.2	2.1	2.7	4.2	3.2	3.2	3.3	4.2	5.7	6.8	3.5	4.2	6.7
PROCESSING	12.2	12.7	18.8	12.2	15.6	23.6	17.2	17.1	16.2	19.5	26.3	33.4	17.7	20.6	30.7
MARKETING ECONOMICS	1.8	1.9	2.6	1.8	2.2	2.8	2.1	2.1	2.1	2.6	3.3	4.1	2.2	2.8	4.1
WILDLIFE-FISH	5.4	5.4	8.9	5.4	7.1	9.8	6.2	6.2	6.4	6.1	8.6	11.2	8.5	9.7	14.6
PROTECTION	22.7	20.8	27.2	22.7	23.1	32.3	26.4	26.5	25.6	29.1	39.2	50.0	26.5	30.9	47.3
INSECTS	9.7	9.1	11.8	9.7	10.0	15.0	13.6	13.6	12.7	15.1	19.1	24.2	12.7	14.5	21.6
DISEASE	6.7	6.0	8.1	6.7	6.9	8.8	6.6	6.6	6.5	7.3	10.2	12.6	7.1	8.2	12.9
FIRE	6.3	5.7	7.3	6.3	6.2	8.5	6.2	6.3	6.3	6.7	9.8	12.7	6.7	8.2	12.8
PROGRAM TOTAL [1]	100.4	96.6	135.0	100.4	112.0	163.9	111.5	111.5	111.5	123.8	168.1	215.2	119.9	138.8	214.6
CONSTRUCTION	.3	.3	3.8	.3	2.2	5.7	2.4	2.4	2.4	3.3	6.6	14.2	3.3	4.5	14.2
TOTAL RESEARCH [2]	112.1	109.4	153.6	112.1	127.9	187.6	129.1	129.1	129.1	143.0	195.0	252.6	139.0	161.0	252.0

[1]For comparability with the Recommended Program document, Program totals for the High and Low Bound include Washington Office costs and some international forestry costs but these are not included in the resource areas. The 10 alternatives include these costs in the resource areas. For comparison with the alternatives, the Recommended Program with these costs included is shown in the resource areas in appendix L.

[2]Totals include some Administrative Costs not shown in the body of the table.

ALTERNATIVE 4 All Resources			ALTERNATIVE 5 Reduced			ALTERNATIVE 6 Implement Plans			ALTERNATIVE 7 High PNV			ALTERNATIVE 8 1980 RPA			ALTERNATIVE 9 High Productivity		
1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
MILLIONS OF 1982 DOLLARS																	
8.5	**10.4**	**15.6**	**5.6**	**5.8**	**5.8**	**9.4**	**13.3**	**19.4**	**8.1**	**11.8**	**13.0**	**9.4**	**13.3**	**19.4**	**9.3**	**12.5**	**14.7**
7.7	9.4	14.0	5.2	5.4	5.4	8.4	12.0	17.4	7.3	10.6	11.3	8.4	12.0	17.4	8.4	11.3	12.8
.8	1.0	1.6	.8	.4	.4	.9	1.3	2.0	.8	1.1	1.8	.9	1.3	2.0	.9	1.2	1.9
4.2	**4.9**	**7.2**	**2.6**	**2.8**	**2.8**	**4.6**	**6.2**	**8.8**	**4.2**	**5.4**	**9.5**	**4.6**	**6.2**	**8.8**	**4.3**	**4.2**	**5.0**
3.7	**5.3**	**7.3**	**2.6**	**3.0**	**3.0**	**4.2**	**6.1**	**8.5**	**3.9**	**5.9**	**8.4**	**4.2**	**6.1**	**8.5**	**4.4**	**6.4**	**8.3**
3.8	**4.8**	**6.7**	**1.6**	**1.6**	**1.6**	**4.2**	**5.6**	**7.5**	**2.4**	**3.3**	**5.4**	**4.2**	**5.6**	**7.5**	**2.3**	**2.3**	**2.5**
2.2	2.8	3.7	1.1	.9	.9	2.4	3.2	3.9	1.3	1.7	3.0	2.4	3.2	3.9	1.3	1.2	1.5
1.6	2.0	3.1	.5	.7	.7	1.8	2.4	3.6	1.1	1.5	2.3	1.8	2.4	3.6	1.0	1.1	1.0
.4	**.7**	**1.0**	**.7**	**.7**	**.5**	**.7**	**.9**	**1.0**	**.3**	**.3**	**.5**	**.7**	**.9**	**1.0**	**.2**	**.3**	**.6**
65.8	**82.2**	**119.4**	**47.0**	**47.0**	**47.2**	**73.4**	**101.6**	**146.8**	**65.8**	**96.0**	**134.2**	**73.4**	**101.6**	**146.8**	**78.2**	**92.2**	**113.0**
10.7	13.6	20.3	8.7	8.4	8.4	12.1	17.3	24.9	11.0	16.1	22.4	12.1	17.3	24.9	11.6	12.2	13.6
2.6	2.8	3.8	1.2	1.3	1.3	3.0	3.1	4.4	1.9	3.2	3.6	3.0	3.1	4.4	2.2	2.5	2.8
20.6	25.4	36.8	14.8	14.8	14.9	22.5	31.7	45.8	20.2	29.3	41.9	22.5	31.7	45.8	25.8	30.2	40.0
5.1	6.2	8.7	3.1	3.2	3.3	5.7	7.7	10.9	4.8	7.1	9.2	5.7	7.7	10.9	6.4	7.3	8.8
2.5	3.4	4.8	1.9	1.7	1.7	2.8	3.9	5.7	2.9	4.1	5.6	2.8	3.9	5.7	2.7	3.2	4.0
3.6	4.5	6.8	2.6	2.8	2.8	4.2	5.2	8.4	3.8	5.1	7.4	4.2	5.2	8.4	4.6	6.1	6.6
18.5	23.1	33.4	13.1	13.1	13.1	20.6	29.1	41.8	18.4	26.8	37.6	20.6	29.1	41.8	22.0	27.0	32.7
2.2	3.2	4.6	1.7	1.7	1.7	2.4	3.4	4.9	2.8	4.2	6.3	2.4	3.4	4.9	3.0	3.8	4.9
6.5	**7.9**	**11.4**	**4.9**	**4.4**	**4.4**	**7.2**	**9.7**	**14.6**	**6.5**	**9.3**	**13.2**	**7.2**	**9.7**	**14.6**	**7.0**	**8.5**	**11.0**
26.9	**32.1**	**47.7**	**20.1**	**20.2**	**20.1**	**29.5**	**42.2**	**60.1**	**28.7**	**41.4**	**51.0**	**29.5**	**42.4**	**60.1**	**31.7**	**34.7**	**41.2**
13.1	15.1	23.0	10.0	10.0	10.0	14.2	20.7	30.0	14.3	20.0	27.1	14.2	20.7	30.0	16.2	17.7	19.5
7.2	8.8	12.7	4.6	4.7	4.8	7.9	11.4	15.9	7.4	11.2	14.2	8.0	11.4	15.9	8.1	8.8	11.1
6.6	8.2	12.0	5.4	5.3	5.3	7.3	10.3	14.3	7.0	10.2	9.7	7.3	10.3	14.3	7.4	8.2	10.6
119.8	**148.2**	**216.4**	**84.8**	**84.8**	**84.8**	**133.1**	**185.8**	**266.8**	**119.8**	**173.4**	**235.0**	**133.1**	**185.8**	**266.8**	**137.5**	**160.9**	**195.8**
3.2	**5.2**	**14.2**	**.5**	**.5**	**.5**	**4.0**	**7.6**	**17.0**	**3.2**	**6.9**	**15.4**	**4.0**	**7.6**	**17.0**	**3.3**	**5.2**	**6.9**
139.0	**172.0**	**254.0**	**96.8**	**96.8**	**96.8**	**154.5**	**214.9**	**310.0**	**139.0**	**201.0**	**276.5**	**154.5**	**214.9**	**310.0**	**156.8**	**184.7**	**223.8**

COMPARISON OF ALTERNATIVES

This section compares the alternatives, including the Recommended Program, in terms of management activities, resource outputs, public benefits, and their responses to the national goals. Graphic displays of the differences among alternatives are provided to facilitate the comparison. Figure 2.1 depicts the relative response of each alternative to individual resource goals. Tables 2.32, 2.33, and 2.34, on the preceding pages, display the resource outputs, activities, and costs selected for comparison. Region, Station, and Area outputs, activities, and costs are displayed in appendix H. Appendix L displays national summaries by alternative for seven time points.[1]

The comparison considers each resource opportunity area, program costs and work-force requirements, and significant environmental effects. The comparisons by resource opportunity area reflect each alternative's response to the goals, and are displayed separately by the three agency program areas: National Forest System, State and Private Forestry, and Research. The remaining comparisons integrate the program area effects.

Information about potential research outputs and benefits from two new studies were considered with the background material provided by the Forest and Range Experiment Stations in developing and comparing research programs. One study, conducted for the Forest Service by the University of Minnesota, was quantitatively oriented; estimated outputs and returns from Forest Service research were based on given investment levels.[2] A second study developed information for ranking the benefits of one type of research compared to other types.[3]

Air, Soil, and Water

National Forest System

All alternatives meet legal requirements for air, soil, and water. Mitigating costs necessary to prevent adverse impacts vary among alternatives. Disturbed acres are a good indicator of these costs. Figure 2.2 displays the disturbed acres maintained in satisfactory watershed condition in each alternative.

Alternatives 2 and 9 contain the largest quantity of disturbed acres maintained but they also carry the highest potential risks for watershed damage. They are also the most likely to experience cumulative adverse impacts, particularly Alternative 9 where only the minimum legally acceptable standards for watershed maintenance would be followed.

Each alternative incorporates inventory, monitoring, and improvement commensurate with the needs for resource protection, development, and use. In Alternatives 3 and 3A, water quality objectives are higher because of the increased use of water for recreation and fisheries. These alternatives have the most improvement activities. Air quality-related values would be inventoried and monitored only when threatened, except for Alternatives 6 and 8, where additional work will be done in response to project plans. The Recommended Program at the Low Bound will yield less additional acre-feet of water than any other alternative, except Alternative 5. The High Bound also starts with a water yield lower than most of the alternatives, but by 1990 rises above the yields of Alternatives 1, 3, 3A, 4, and 5. The High Bound is nearest Alternative 6 by 2030.

Increased water yield results primarily from vegetative treatments. Any significant vegetative harvest, such as a timber sale, or conversion may have an effect on water yield. Increased water is shown as an output only where it is one of the management objectives because the opportunity to measurably increase water yield through land management is limited to small watersheds where specific needs can be met. Even under the most intensive multiple-use management, large basin increases would be in the range of .5 to 2 percent, which would be below the level of detection.

State and Private Forestry

The Cooperative Forestry Assistance Act emphasizes the importance of protecting and improving the quality, quantity, and timing of water yields from non-Federal forest lands [P.L. 95-313, Section 3(b)(6)(d)].

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1 Many of the numbers in this FEIS differ from those in the DEIS because of new analysis since the DEIS was issued such as revised values and use of new resource data from the field.

2 Gregersen H.; J. Haygreen, I. Holland, and D. Erkkila. Impacts of Forest Utilization Research: An Economic Assessment. University of Minnesota, College of Forestry, St. Paul. Unpublished Report. 1983

3 Shafer, E.L., and James B. Davis. USDA Forest Service Research Program: 1985-2030--Summary of Benefits and Costs. USDA Forest Service. Washington, D.C. Unpublished Report. 1983.

Figure 2.1

Response of RPA Alternatives to Goals

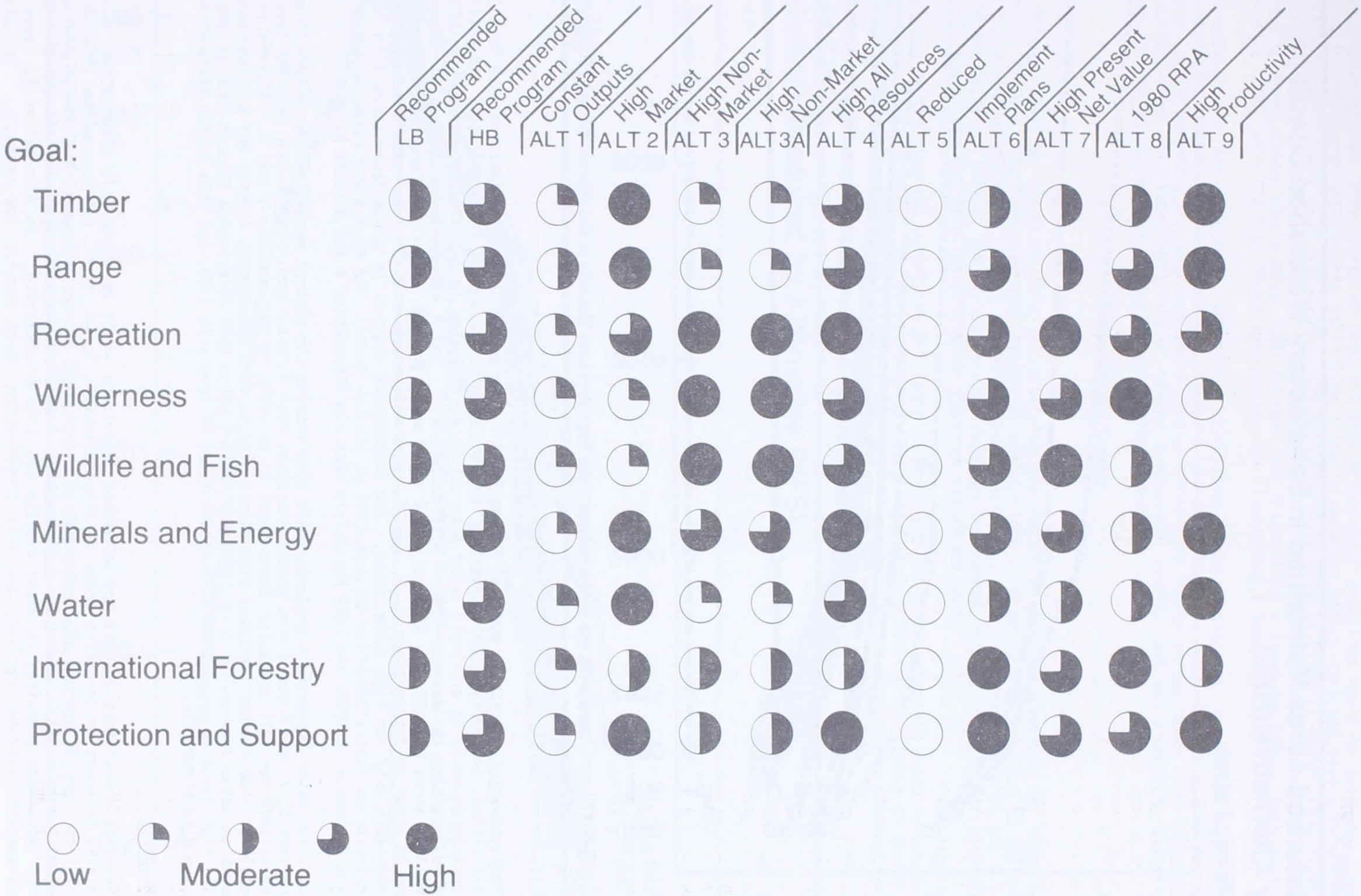
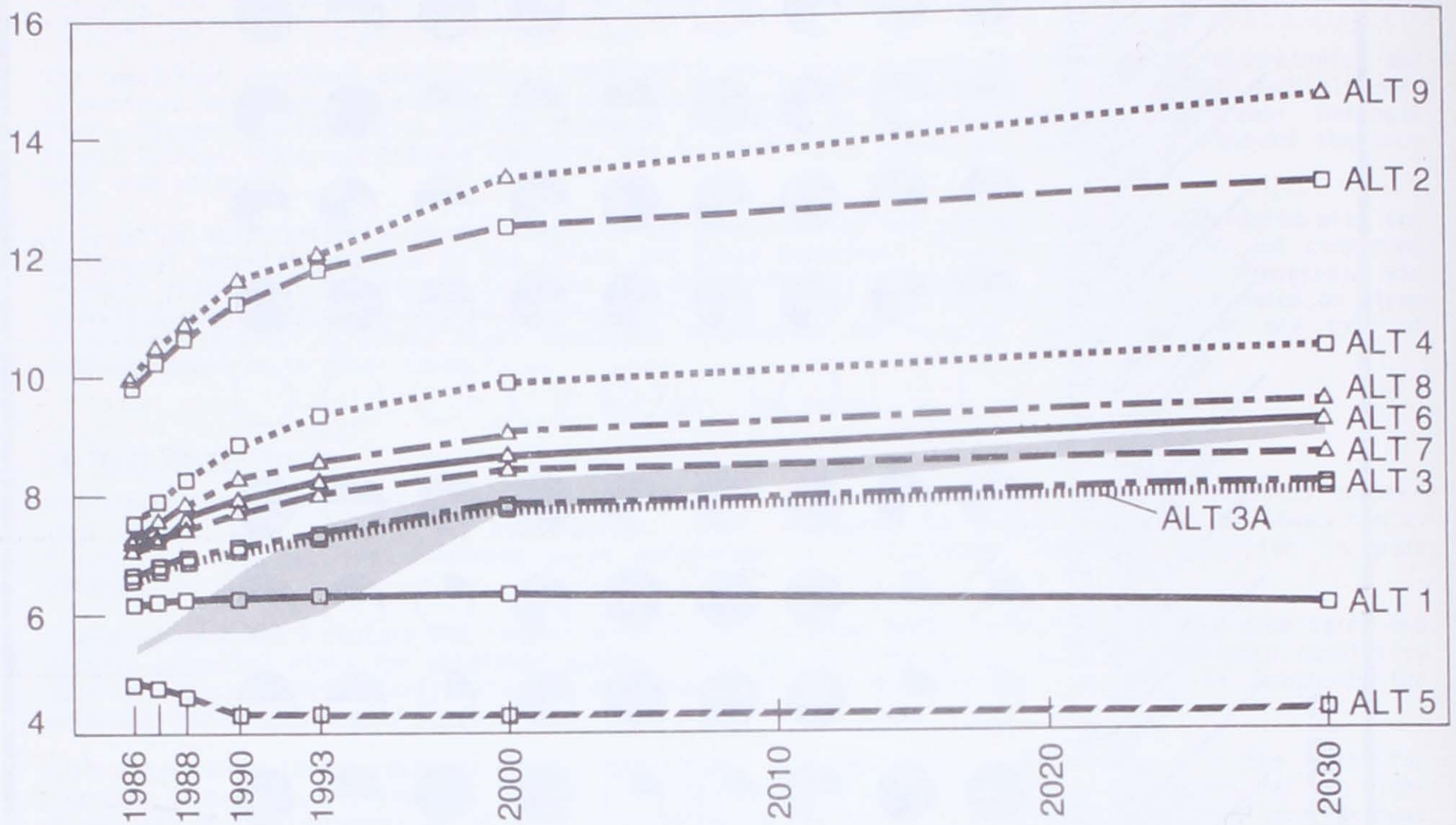


Figure 2.2

Disturbed Acres Maintained in Satisfactory Watershed Condition by Alternative (NFS)



The shaded portion represents the range between the High and Low Bounds of the Recommended Program.

Soil and water protection would be accomplished by State foresters in conjunction with forest management activities, including timber harvesting and reforestation. Significantly more soil and water protection assistance would be available under Alternative 2, resulting in 5.9 million acres of maintained watershed condition by the year 2030. Alternatives 6, 7, and 9 would provide protection on more than 5.2 million acres by 2030, and Alternatives 4 and 8 would protect 4.4 million acres. More modest increases would occur in Alternatives 1, 3, and 3A. Under Alternative 5, limited technical assistance would be available only for high value areas. The Recommended Program is below Alternative 5 in 1986, and remains below that alternative through 1990 at the Low Bound. The High Bound rises to the Alternative 3 and 3A levels in 1990, and both Bounds are near the Alternative 4 and 8 level by 2030.

Soil and water improvement projects would also receive the highest emphasis under Alternative 2. Alternatives 6, 7, and 9 would show modest increases over Alternatives 4 and 8--the 1980 RPA level. Limited assistance for soil and water improvement is possible in Alternatives 1 and 5. Alternatives 3 and 3A would provide a modest increase from Alternative 1. The Recommended Program for soil and water improvement is below Alternative 5 in 1986, and remains below that alternative through 1990 at the Low Bound. The High Bound is nearest the Alternative 3 and 3A levels in 1990, and both Bounds approach the Alternative 6 level by 2030.

Research

Research investments in soil and watershed activities would be highest in Alternatives 6 and 8, generally followed in decending order by Alternatives 2, 3, 3A, 4, 7, the Recommended Program and Alternatives 1 and 5 (table 2.34). Research on water yield and quality would have the highest emphasis in Alternatives 6 and 8. Research in Alternatives 2 and 9 would investigate the effects of intensive timber management practices on water quality and site productivity. In Alternative 5, research on snow management, nutrient cycling, and soil conservation would receive low emphasis. In Alternative 9,

research to minimize effects from increased road and site preparation practices would be expanded. Research funding in the Recommended Program will allow a low to moderate effort directed toward determining the mechanisms which cause acid deposition. The Recommended Program is slightly higher than Alternative 1 in 1986, but declines in 1987. It remains below Alternative 1 through 1990 at the Low Bound; however, the High Bound rises slowly after 1987 to near the Alternative 1 level by 1990. Both Bounds rise slowly after 1990, with the High Bound approaching the Alternative 7 level by 2030.

Research investments in air management activities (including smoke management and acid deposition evaluation) would be highest for Alternative 2, followed by Alternatives 4, 6, 8, 7, and 9, the Recommended Program, and Alternative 5. Research would develop methods to better manage smoke from increased use of prescribed fire associated with higher timber production levels, and would develop analysis techniques to improve assessments of potential air-quality impacts.

Minerals and Energy

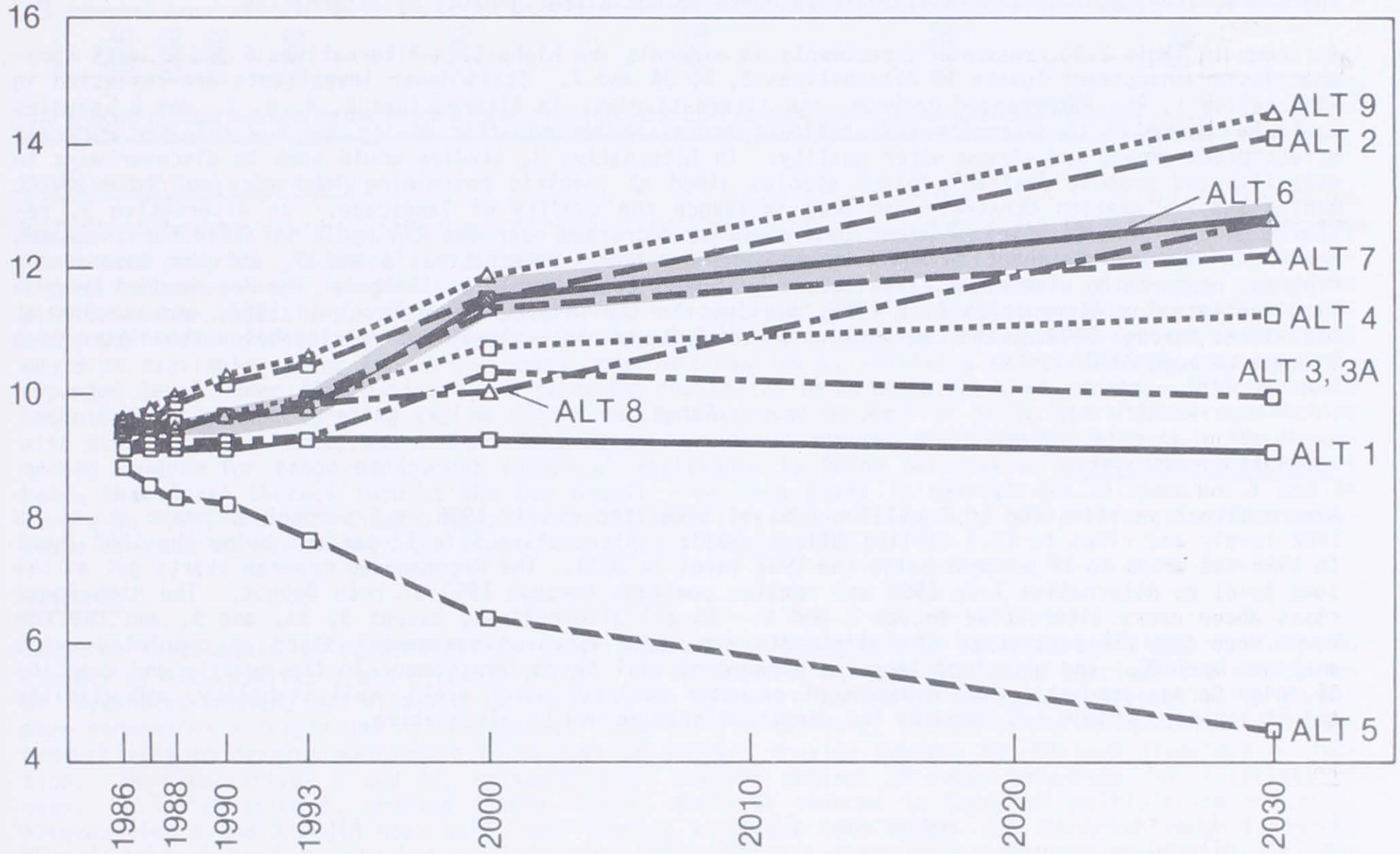
National Forest System

The Forest Service plays an important role in satisfying the Nation's need for minerals and fuels to support economic growth. The Forest Service evaluates applications or proposals by industry to explore and develop these resources on NFS lands. Based on the evaluations, and in cooperation with the U.S. Department of the Interior (USDI), the Forest Service develops procedures and requirements for minerals activities. This provides coordination with other resource values and uses.

Nearly 50 percent of the minerals underlying NFS lands in Regions 8 and 9 are privately owned in reserved and outstanding mineral rights. The Forest Service has a legal responsibility to respond to operating plans for these minerals. Figure 2.3 displays the level of energy minerals produced by alternative.

Figure 2.3

Energy Minerals Produced by Alternative (NFS)



The shaded portion represents the range between the High and Low Bounds of the Recommended Program.

Mineral operating plans and lease applications would be processed promptly in Alternatives 2, 4, 6, 7, and 9 and would be most constrained in Alternative 5. Priority would be given to exploration and development of energy minerals, and minerals of strategic importance. The Recommended Program has higher outputs than Alternative 1 at the Low Bound. At the High Bound, production is constant in the early years and matches Alternative 7 by 1990. Both Bounds rise sharply after 1990 with the High Bound exceeding the Alternative 8 level by 2030.

State and Private Forestry

State and Private Forestry activities in the minerals opportunity area would consist of technical assistance by Federal personnel to State forestry agencies for reclamation of lands affected by surface mining (primarily coal), and coordination with other agencies. This assistance would be provided under the Rural Forestry Assistance program. It is anticipated that State forestry agency activities in mined land reclamation, such as providing technical assistance to landowners, organizations, industry, or other agencies, will be funded primarily by the Office of Surface Mining (USDI) or the respective State mining and reclamation regulatory agencies.

The amount of technical assistance provided by the Forest Service to State forestry agencies would vary from a minimum level in Alternative 5 to a moderately increased level in Alternative 2. The Recommended Program for minerals and energy is below the Alternative 5 level in 1986 and 1987. The High Bound Program would provide for a gradual increase in technical assistance beginning in 1988; at the Low Bound the increase would not occur until after 1990. Both Bounds would approach the Alternative 2 level by 2030. Reclamation assistance would be emphasized in the Rocky Mountain and Intermountain States, the Pacific Northwest, and the East.

Research

Minerals research activities respond to a broad spectrum and large backlog of problems and concerns. As of June 1977, an estimated 4.5 million acres of land had been surface mined in the East. Most coal reserves remaining in the Appalachian region are in forested mountains where current mining methods create many environmental problems not solvable or economically feasible to correct, using existing reclamation techniques. Also, surface mining in the West is expected to create similar environmental concerns. Therefore, investment levels in minerals research do not differ greatly by alternative.

As shown in table 2.34, research investments in minerals are highest in Alternatives 6 and 8, with somewhat lesser investment levels in Alternatives 2, 3, 3A and 7. Still lower investments are reflected in Alternative 1, the Recommended Program, and Alternative 5. In Alternatives 2, 4, 6, 7, and 8, studies would be conducted to determine soil building processes needed after mining and how released minerals effect plant growth and stream water quality. In Alternative 3, studies would seek to discover ways to establish and promote desirable plant species aimed at specific postmining land use, and to evaluate mining and reclamation strategies as they influence the quality of landscape. In Alternative 9, research on the rehabilitation of mined land would be decreased over the RPA cycle to allow for increases needed in research oriented to timber production. Under Alternatives 1 and 5, and the Recommended Program, research on site rehabilitation and hazardous wastes would be limited. The Recommended Program is slightly below Alternative 1 in 1986, declines to the Alternative 5 level in 1987, and remains at that level through 1990 at the Low Bound. The High Bound rises slowly but remains below the Alternative 1 level through 2030.

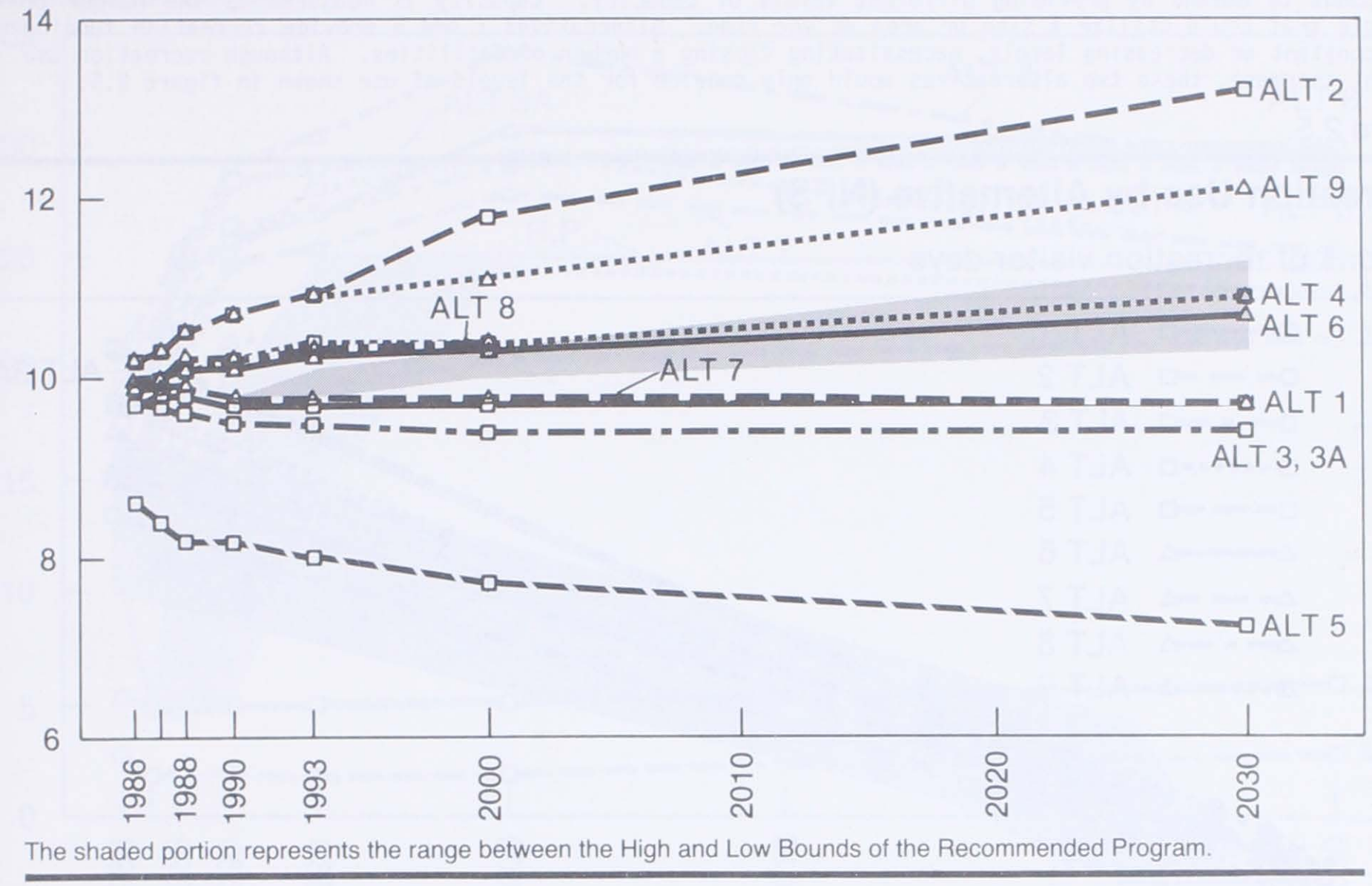
Range

National Forest System

Alternative 2 provides for 10.2 million AUMs of permitted use in 1986, a 5-percent increase above the 1982 level, and rises to 13.3 million AUMs by 2030. Alternative 5 is 12 percent below the 1982 level in 1986 and drops to 27 percent below the 1982 level in 2030. The Recommended Program starts out at the same level as Alternative 1 in 1986 and remains constant through 1990 at both Bounds. The High Bound rises above every alternative except 2 and 9. In all alternatives, except 3, 3A, and 5, and the Low Bound more than 94 percent of the allotments are under improved management based on completed range analyses by 2030. The effect of improved management will be an improvement in the quality and quantity of range forage production and enhancement of water quality, water yield, soil stability, and wildlife and fisheries. Figure 2.4 compares the permitted grazing use by alternative.

Figure 2.4

Permitted Grazing Use by Alternative (NFS)



The shaded portion represents the range between the High and Low Bounds of the Recommended Program.

State and Private Forestry

Forage production for livestock use is among the multiple resources included in the Rural Forestry Assistance program. Technical and related assistance is provided on non-Federal forested ranges primarily by including range management considerations in multipurpose forest management plans when compatible with landowner objectives. Cooperative efforts in range are closely coordinated with other USDA agencies, particularly the Soil Conservation Service and Extension Service. The amount of assistance that would be available varies from a low level under Alternative 5, involving selected areas, to a greatly expanded level under Alternative 2, which would capitalize on private forested ranges. With adequate technical assistance, grazing can be significantly increased on much of this land without conflicting with other resource uses, and without land deterioration or adverse environmental effects. The Recommended Program for range management technical assistance is below Alternative 5 in 1986, and remains below that level through 1990 at the Low Bound. The High Bound is nearest the Alternative 3 and 3A levels in 1990, and both Bounds approach the Alternatives 4 and 8 level by 2030, which provides assistance at about midway between the lowest and highest alternatives.

Research

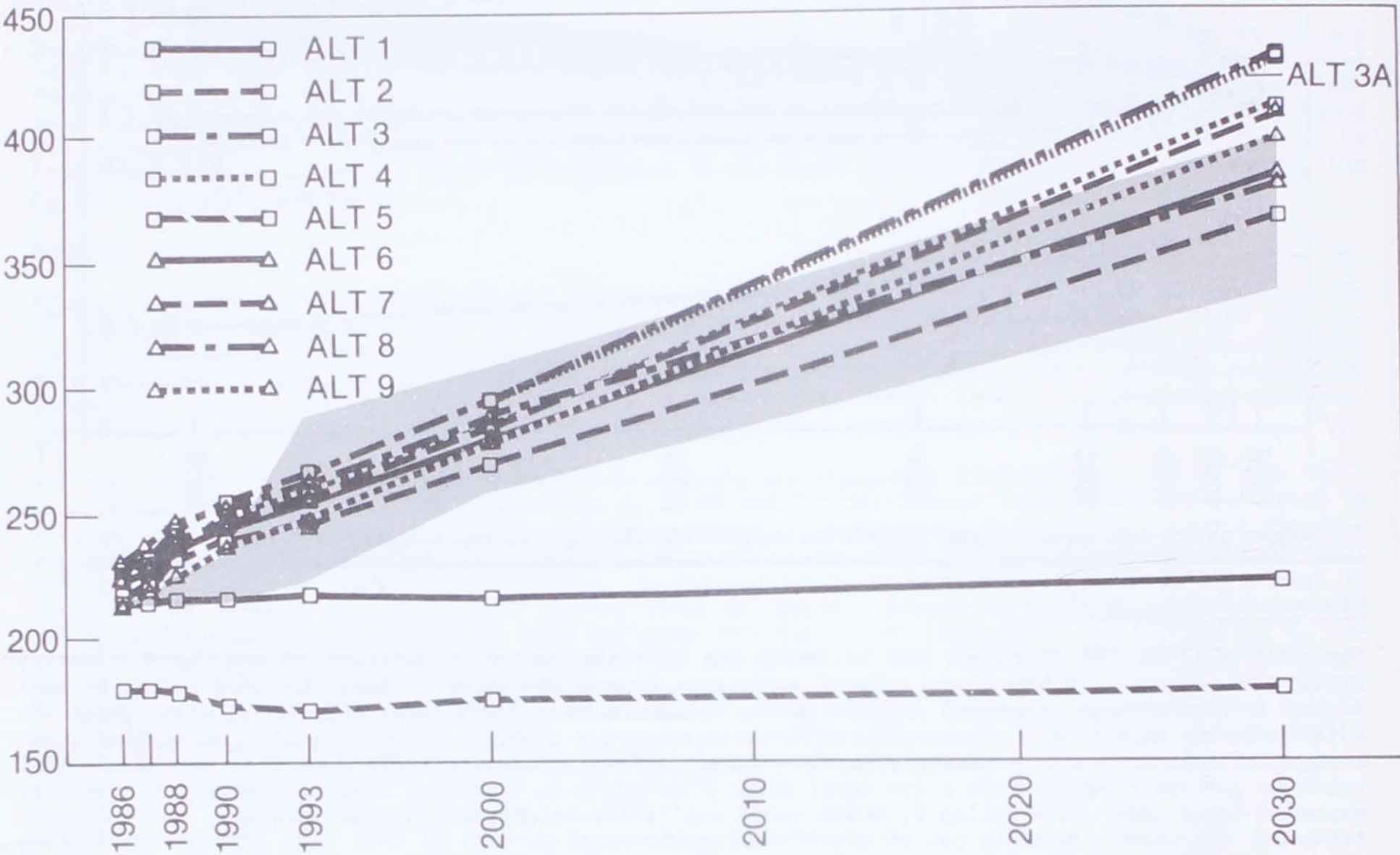
Research investments in support of the range goal would be highest in Alternatives 2 and 9, followed closely by Alternatives 6 and 8 (table 2.34). In Alternative 2, research would continue the evaluation of livestock, timber, and wildlife interactions in an effort to devise management systems which permit more harmonious multiple-use relationships. Also in Alternative 2, studies would be conducted on forage productivity to develop management techniques to support grazing systems for maximum livestock production. In Alternatives 3 and 3A, research would involve studies of range resources for a variety of uses. In Alternative 5, grazing system studies would be reduced in favor of multiple-use research. Alternatives 6 and 8 would have sufficient funding to pursue both market and nonmarket range research; that is, forage productivity and multiple use. Alternative 7 would emphasizes cost-benefit studies for different grazing systems and range management techniques. Research in Alternative 9 would concentrate on studies to increase forage productivity through improved management systems, as well as studies to increase timber production while also managing range for increased livestock values and protection of wildlife. The Recommended Program emphasizes development of more cost-effective and environmentally sound techniques for controlling competitive vegetation on high quality forest and range land sites at both Bounds. The High Bound exceeds Alternative 5 by 2030, and research costs are below all other alternatives in 2030 at the Low Bound.

National Forest System

Demand for recreation opportunities is expected to increase as it has in the past. Each alternative responds to demand by providing different levels of capacity. Capacity is measured by the number of people that could utilize a site or area at one time. Alternatives 1 and 5 provide recreation funding at constant or decreasing levels, necessitating closing a number of facilities. Although recreation use might increase, these two alternatives would only provide for the levels of use shown in figure 2.5.

Figure 2.5

Recreation Use by Alternative (NFS)



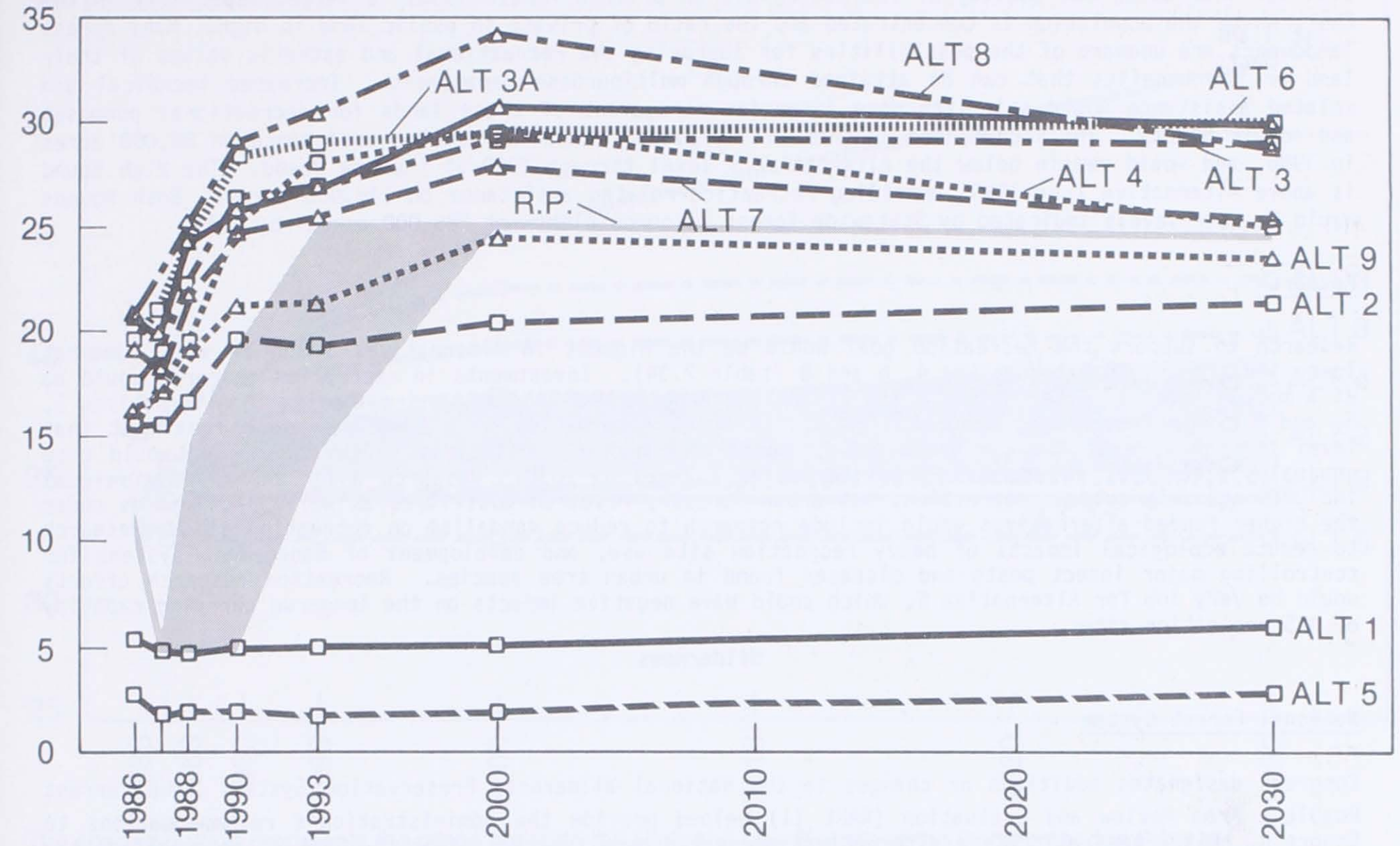
The shaded portion represents the range between the High and Low Bounds of the Recommended Program.

All alternatives, except 1 and 5, provide for increased recreation use of NFS lands. For alternatives where capacity is limited, actual use may be greater, resulting in reduced quality experiences and possible closing of some deteriorating facilities. Alternative 3, which has the highest use, increases from 227 million RVDs in 1986 to 438 million RVDs in 2030. The Recommended Program at the High Bound is slightly higher than Alternative 1 in 1986-1990. After 1990 it rises to a level slightly below Alternatives 4 and 7. The Low Bound exceeds only Alternative 1 and 5 by 2030.

Recreation use in Alternative 5 is projected to be 24 percent lower than the 1982 level through 2030, due to site degradation or site closings from reduced funding. Under Alternatives 1 and 5 the programs will result in deterioration of capital investments. This would result in a backlog of facilities maintenance needs, and capital investments may be lost because of lack of facility maintenance. Alternatives 6, 8 and the Recommended Program provide the largest capital investment funding for recreation facility construction or reconstruction. These alternatives respond to the need for repair and rehabilitation of existing facilities to bring them up to current health and safety standards. Figure 2.6 displays projected recreation facility construction/reconstruction investments by alternative.

Figure 2.6

Recreation Facility Construction/Reconstruction Investments by Alternative (NFS)



The shaded portion represents the range between the High and Low Bounds of the Recommended Program.

Table 2.35 displays, by alternative, the percent of recreation visitor days where physical, social, or managerial standards are satisfied by 2030. Quality and management standards include items such as soil protection, litter cleanup, potable water, and sanitation.

Table 2.35--Percent of Recreation Visitor Days at Established Management Standards in 2030 by Alternative

	Recommended Program		Alternatives									
	Low Bound	High Bound	1	2	3	3A	4	5	6	7	8	9
Percent	55	75	18	61	96	96	69	13	79	70	75	96

State and Private Forestry

State and Private Forestry would contribute to the achievement of the recreation goal by providing technical assistance to forest landowners on improving access to lands for outdoor recreation near urban areas. Outdoor recreation and esthetic values are among the multiple uses for which non-Federal land is managed. State and Private Forestry activities support this management through preparation of multipurpose forest management plans that include dispersed recreation opportunities, and through technical assistance for implementing the plans. In many situations, silvicultural treatments for timber production or other purposes can be highly beneficial to recreation use and scenic value. In other instances, specific vegetation management and other treatments may be prescribed for these purposes.

The amount of recreation-related assistance targeted in Alternative 1 is constant at 116,000 acres. Alternative 2 would provide the highest level of recreation assistance--398,000 acres in 1986, increasing to 888,000 acres by 2030. This would occur through active promotion of vegetation management and other treatments to improve the quality of forest land for recreational pursuits. Recreation assistance would be provided, on request, for 85,000 acres at the reduced budget level (Alternative 5). The potential for increasing the quality of recreation use on private forest lands is large, especially in the East, where the population is concentrated and the ratio of private to public land is high. Many forest landowners are unaware of the possibilities for improving the recreational and esthetic values of their land or the benefits that can be attained through multipurpose management. Increased technical and related assistance would stimulate more intensive management of these lands for recreational purposes and scenic beauty. The Recommended Program will provide recreation-related assistance on 82,000 acres in 1986, and would remain below the Alternative 5 level through 1990 at the Low Bound. The High Bound is above Alternative 1 by 1990, providing recreation-related assistance on 146,000 acres. Both Bounds would be near levels indicated by Statewide forest resource plans--at 386,000 acres--by 2030.

Research

Research to support the recreation goal would be the highest in Alternatives 3 and 3A with somewhat lower investments in Alternatives 4, 6 and 8 (table 2.34). Investments in recreation research would be at a medium level in Alternatives 2 and 7, and the Recommended Program, and quite low in Alternatives 1, 5, and 9. The Recommended Program is slightly below Alternative 5 in 1986 and would remain at that level through 1990 at the Low Bound due to short-term budget constraints. The High Bound would rise gradually after 1987 to approach the Alternative 7 level by 2030. Research under the recreation goal includes not only outdoor recreation, but urban forestry research activities as well. Activities under the higher funded alternatives would include research to reduce vandalism on recreation sites, research to reduce ecological impacts of heavy recreation site use, and development of management systems for controlling major insect pests and diseases found in urban tree species. Recreation research efforts would be very low for Alternative 5, which could have negative impacts on the long-run carrying capacity of NFS recreation sites.

Wilderness

National Forest System

Congress designates additions or changes to the National Wilderness Preservation System. The current Roadless Area Review and Evaluation (RARE II) helped provide the Administration's recommendations to Congress. Wilderness allocation alternatives presented here that vary from the RARE II proposal are the result of land management planning assumptions by National Forests, legislative proposals, and recent legislative action (October, 1984). Alternative 1 contains the acres currently designated in the National Wilderness Preservation System plus the Administration's recommendation to Congress. Where an Administration position has not yet been developed, the RARE II wilderness recommendations were used. Alternative 5 displays only those acres currently designated as wilderness. Alternative 3A shows the highest wilderness acreage, including the acreage in Alternative 3, plus primative areas not included in RARE II acreages and wilderness proposals (by various groups) that were not classified as wilderness or designated for future planning in RARE II.

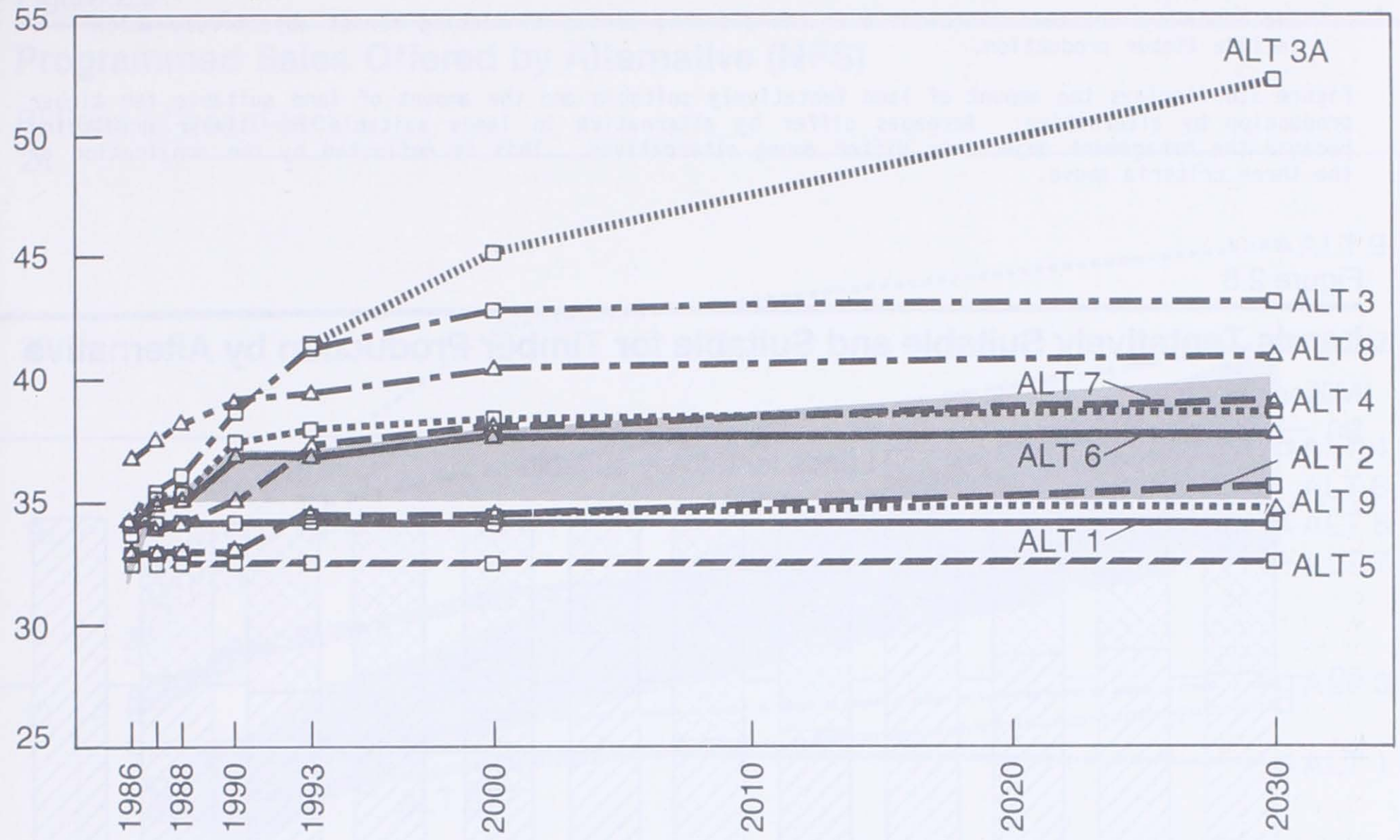
The wilderness acres shown for each alternative represent a range of options under consideration. They are estimates of acres and are subject to modification as the Forest planning process and Congressional action are completed. Wilderness acres in the Recommended Program are the same as Alternative 1 in 1986, but rise in 1987 and remain above Alternative 1 through 2030 at the Low Bound. The High Bound rises slowly after 1987 to near the Alternative 6 level by 1990 and the Alternative 8 level by 2030. Figure 2.7 illustrates the wilderness acreages.

Research

Wilderness research is currently funded at very low levels but would receive modest increases in Alternatives 3, 3A, 6, 7, 8, and the Recommended Program. Activities to support the wilderness goal in the higher funded alternatives would include research to improve methods for predicting demand for wilderness and backcountry recreation, and methodology for reducing the ecological impact of wilderness visitors. These and other research activities related to wilderness protection would receive very low emphasis in Alternatives 5 and 9. Without new wilderness management information, measures to limit the use of wilderness areas near high population centers might need to be implemented late in the planning period.

Figure 2.7

Wilderness Management by Alternative (NFS)



The shaded portion represents the range between the High and Low Bounds of the Recommended Program

Timber

National Forest System

The significant components used in describing the NFS timber activities are discussed separately in this section.

Lands suitable for timber production.--Lands capable, available, and suitable for timber production are forest lands selected from tentatively suitable lands. The tentatively suitable lands are determined by making deductions from the NFS ownership base if any of these four criteria exist:

The land is not forest land.

Technology is not available to ensure timber production from the land without irreversible resource damage to soil productivity or watershed conditions.

There is not a reasonable assurance that such lands can be adequately restocked.

The land has been withdrawn from timber production by an Act of Congress, the Secretary of Agriculture, or the Chief of the Forest Service.

Lands suitable for timber production are determined during the formulation and evaluation of each alternative from the tentatively suitable lands base. Lands are deemed not suitable if they meet any of the following criteria:

Based upon a consideration of multiple-use objectives for the alternative, the lands are proposed for resource uses that preclude timber production, such as wilderness.

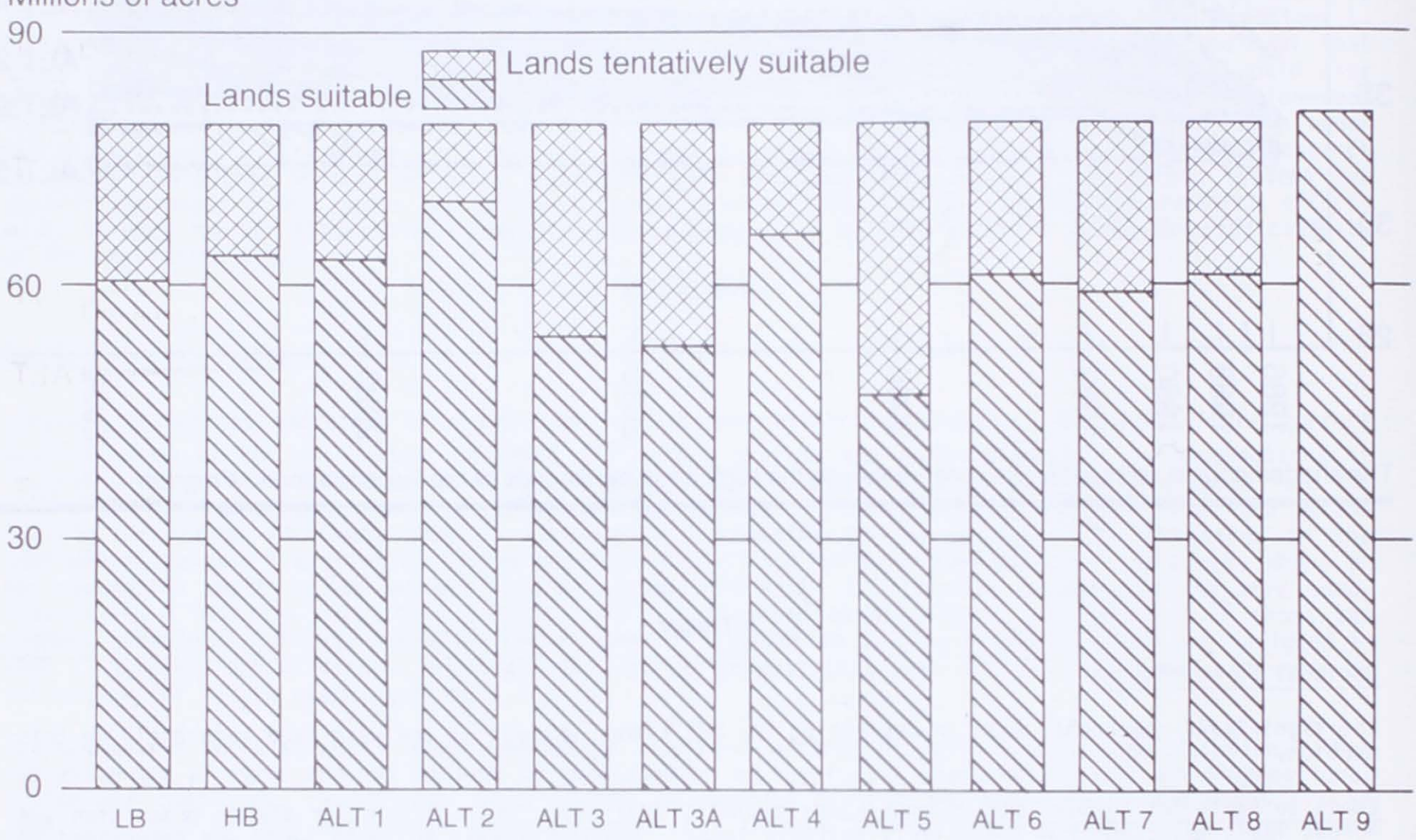
Other management objectives limit timber production activities to the point where management requirements cannot be met.

The lands are not cost efficient over the planning period in meeting forest objectives, which include timber production.

Figure 2.8 displays the amount of land tentatively suitable and the amount of land suitable for timber production by alternative. Acreages differ by alternative in lands suitable for timber production because the management objectives differ among alternatives. This is reflected by the application of the three criteria above.

Figure 2.8

Lands Tentatively Suitable and Suitable for Timber Production by Alternative



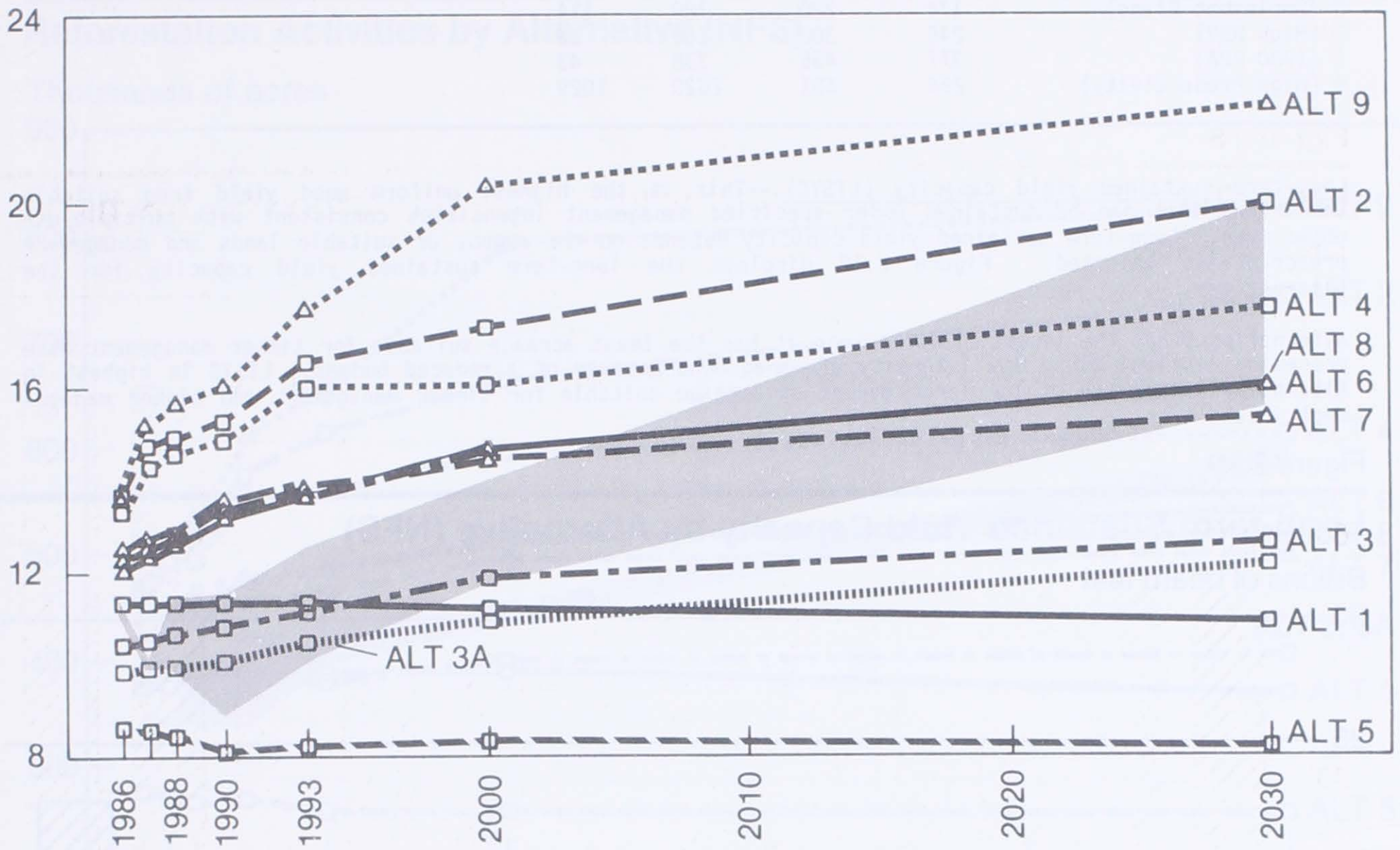
HB = High Bound of the Recommended Program
LB = Low Bound of the Recommended Program

Alternative 9 contains a larger base of tentatively suitable acres because it includes about 1.3 million acres of land in Region 6 and 10 not included in the other alternatives. These lands are in or near municipal watersheds, recreation areas, and experimental forests.

Timber offered for sale.--Timber offered for sale is the volume of timber planned for sale annually from the suitable lands. Differences among the alternatives in volumes offered are primarily due to the differences in management objectives for timber and other resource objectives. Alternative 9 provides the highest level of volume offered of all alternatives. Alternative 5 provides the lowest volume of timber offered. The Recommended Program starts with a slightly higher output in 1986 than Alternative

Figure 2.9

Programmed Sales Offered by Alternative (NFS)



The shaded portion represents the range between the High and Low Bounds of the Recommended Program.

Departure.--A timber sale schedule is developed for each National Forest to establish the allowable sale quantity consistent with multiple-use objectives and to assure attainment of long-term sustained yield. A base sale schedule for a given alternative is formulated on the basis of nondeclining flow from decade to decade. A departure can be characterized as a temporary increase in sale quantity above the base sale schedule, followed by a planned decrease in a later decade, without impairing the future attainment of the long-term sustained yield capacity.

The concept of a departure is most applicable at the National Forest level, for which it is defined. When planned sale volumes from more than one National Forest are added to obtain a Regional sale schedule, declining volumes for some National Forests may be more than offset by increasing volumes on other National Forests. The result, in this case, is that the Forest Service Region shows a nondeclining flow schedule even though departure may occur on individual National Forests. The same relationship occurs at the national level when adding sale volumes of all Regions.

The departure volumes shown for each alternative represent current estimates of the total additional volumes due to departures from all National Forests. Since actual departure volumes will be determined through National Forest plans, these estimates may be adjusted as plans are implemented.

Table 2.36 displays the additional volumes due to departures by alternative. Alternative 9 has the largest additional departure volume, increasing from 254 million board feet in 1986 to 2.6 billion board feet in 2000. The alternative responds to the opportunities identified in the Assessment Supplement to increase sale volumes of old growth timber. Departures are projected in Regions 4 and 6 in all alternatives and in Regions 1 and 5 in Alternatives 2, 4, and 9. A planned decrease below the base sale schedule will occur in individual National Forests with departures.

Table 2.36--Additional Volume Due to Departures in Millions of Board Feet by Alternative

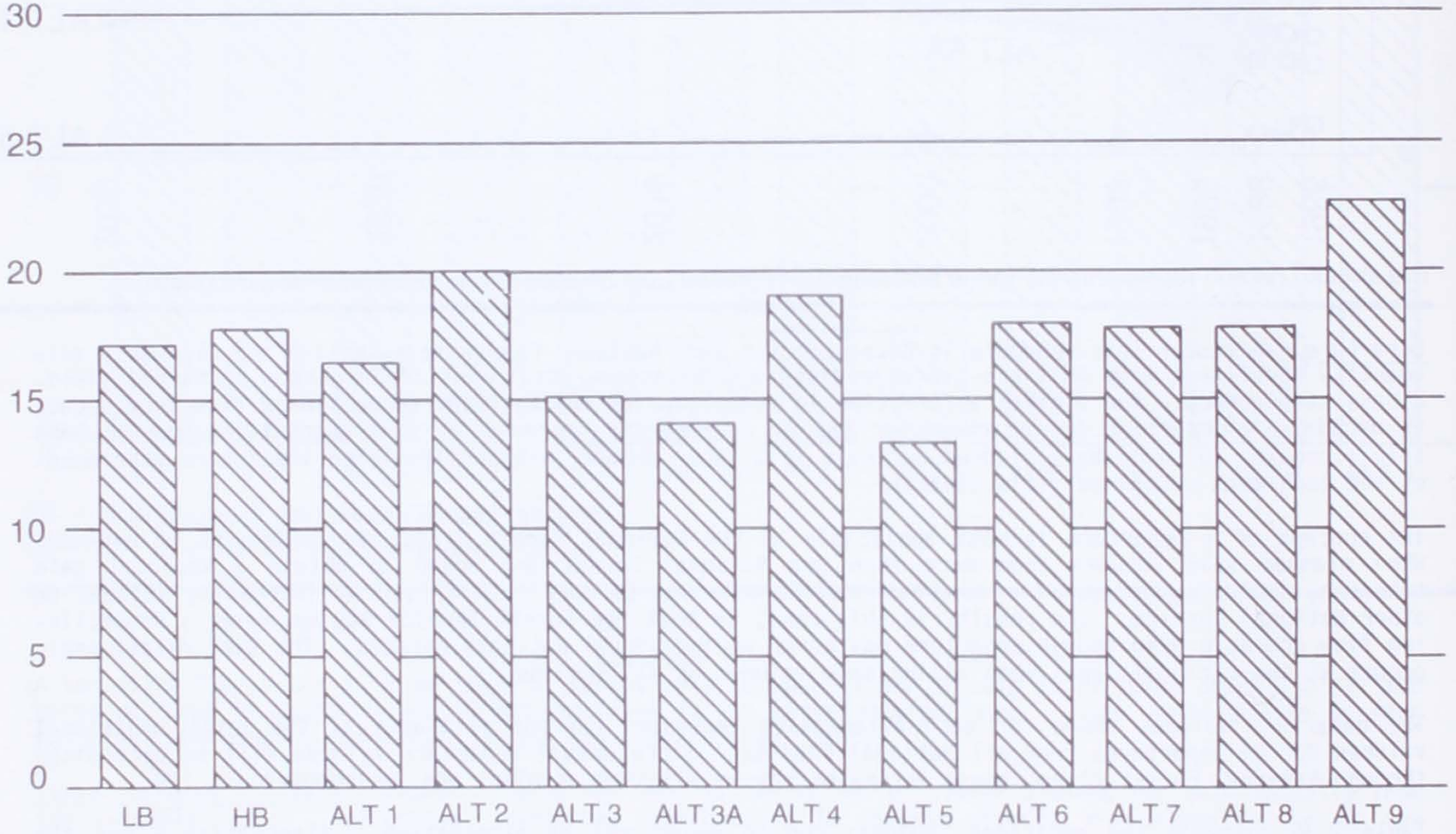
Alternative	1986	1990	2000	2030
Recommended Program	207	240	210	0
1 (Constant Outputs)	201	210	169	118
2 (High Market)	669	958	523	503
3 (High Nonmarket)	207	173	3	0
3A(High Wilderness)	207	173	3	0
4 (High All Resources)	353	769	480	310
5 (Reduced)	235	184	120	134
6 (Implement Plans)	174	220	180	114
7 (High PNV)	245	300	186	13
8 (1980 RPA)	377	455	238	43
9 (High Productivity)	254	651	2620	1029

Long-term sustained yield capacity (LTSYC).--This is the highest uniform wood yield from suitable timberland that can be sustained under specified management intensities consistent with multiple-use objectives. Long-term sustained yield capacity depends on the amount of suitable lands and management prescriptions selected. Figure 2.10 displays the long-term sustained yield capacity for the alternatives.

Alternative 5 has the lowest LTSYC because it has the least acreage suitable for timber management (see preceding section) and a low intensity of management because of a reduced budget. LTSYC is highest in Alternative 9 because of the large amount of acreage suitable for timber management and higher management intensities.

Figure 2.10

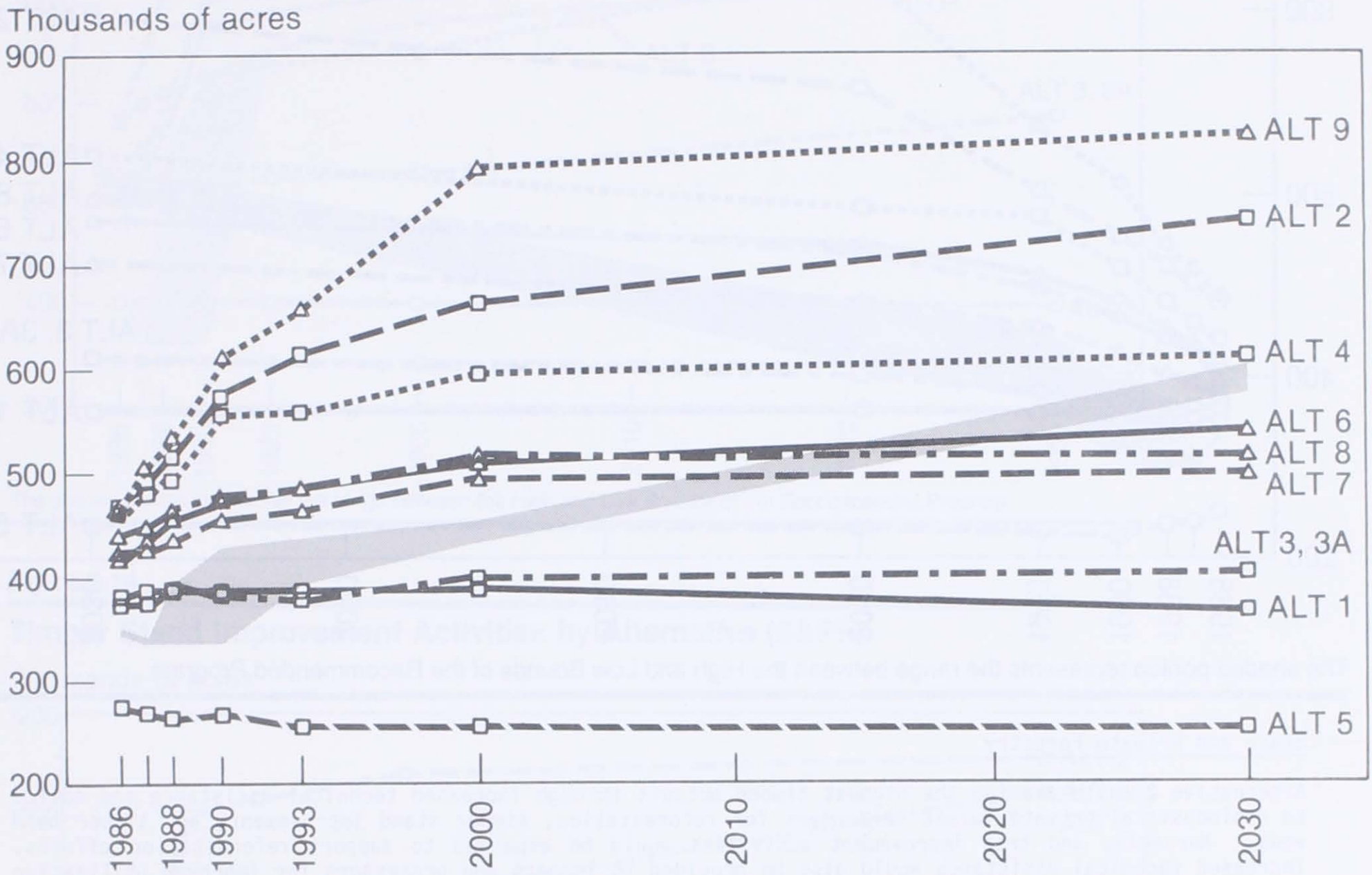
Long-term Sustained Yield Capacity by Alternative (NFS)



Reforestation.--As timber harvest levels increase, reforestation increases. Alternative 9 would increase reforestation from 458,000 acres in 1986 to 811,000 acres in 2030. The other alternatives follow a similar pattern. By 1985, the backlog of reforestation identified in the 1980 RPA Recommended Program was scheduled to be eliminated. Consequently, backlog for reforestation is not shown. Figure 2.11 displays planned reforestation activities by alternative. The Recommended Program is equivalent to Alternative 1 in 1986, Alternative 6 in 2000, and Alternative 4 by 2030.

Figure 2.11

Reforestation Activities by Alternative (NFS)

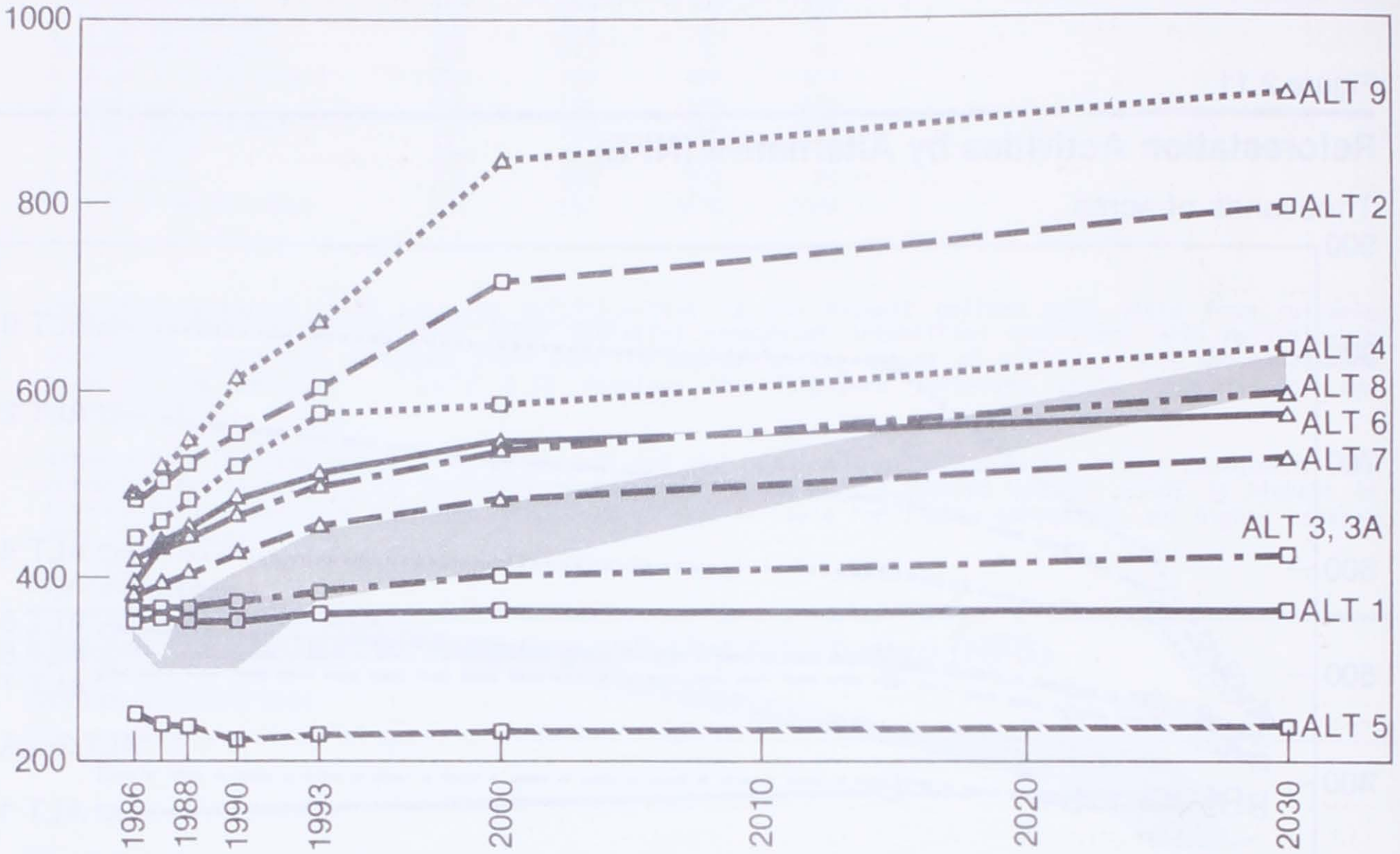


The shaded portion represents the range between the High and Low Bounds of the Recommended Program.

Timber Stand Improvement (TSI).--Investments in TSI are greatest in Alternative 9, resulting in 480,000 acres in 1986 and 906,000 in 2030. This level is nearly 35 percent greater than the 1982 level of TSI. Alternative 5 with only 253,000 acres in 1986 is nearly 30 percent below the 1982 level. Figure 2.12 displays timber stand improvement activities by alternative. The Recommended Program is equivalent to Alternative 1 in 1986, Alternative 6 in 2000, and Alternative 4 by 2030.

Figure 2.12

Timber Stand Improvement Activities by Alternative (NFS)



The shaded portion represents the range between the High and Low Bounds of the Recommended Program.

State and Private Forestry

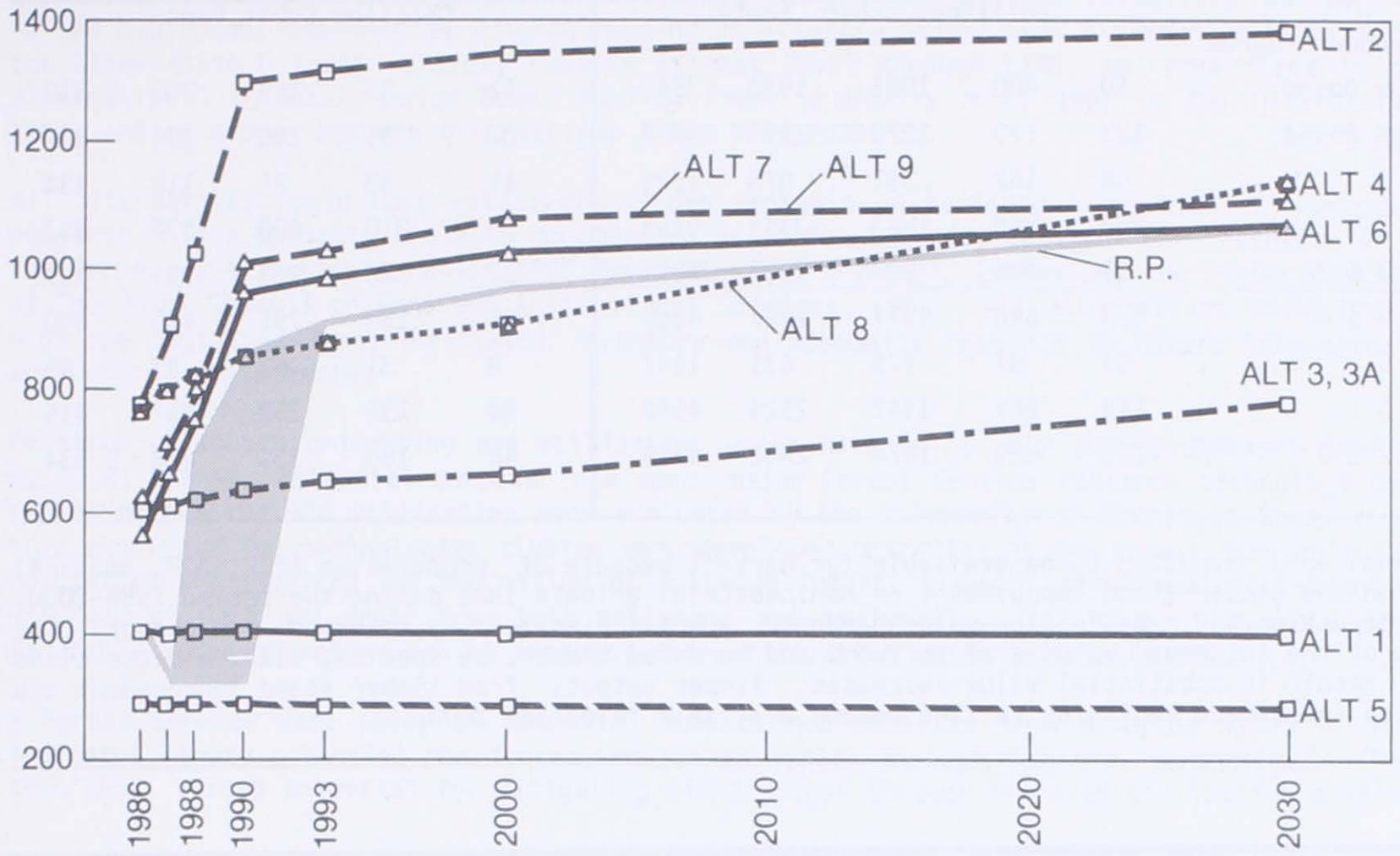
Alternative 2 would provide the highest timber outputs through increased technical assistance and advice to nonindustrial private forest landowners for reforestation, timber stand improvement, and timber harvest. Nurseries and tree improvement activities would be expanded to support reforestation efforts. Increased technical assistance would also be provided to loggers and processors for improved utilization of wood. In contrast, Alternative 5 represents the lowest level for State and Private Forestry assistance in the timber opportunity area. Figures 2.13 and 2.14 display reforestation and timber stand improvement acres by alternative.

Under Alternative 1, the 1982 level and mix of financial and technical assistance would be provided. Moderate increases in this assistance would occur in Alternatives 4 and 8, while assistance under Alternatives 3 and 3A would be at a level midway between Alternative 1 and Alternatives 4 and 8. Alternative 6 (the State preferred plan), and Alternatives 7 and 9 timber outputs are also in the moderate range. The Recommended Program will provide timber-related assistance near Alternative 1 in 1986, however, it declines to near Alternative 5 from 1987 through 1990 at the Low Bound. The High Bound is nearest Alternative 4 and 8 in 1990, and both Bounds reach the Alternative 6 level by 2000.

Table 2.37 displays the increased softwood and hardwood timber production, by time period and by alternative, expected from cooperative reforestation and timber stand improvement activities on nonindustrial private forest land. Reforestation and timber stand improvement accomplishments by 1993 for the Recommended Program are the same in both the High and Low Bounds under the assumption that States will establish necessary landowner incentives to replace declining Federal funding at the Low Bound. Volume differences between the High and Low Bounds in table 2.37 reflect delay due to reduced Low Bound accomplishments from 1986 to 1993. Figure 2.15 compares improved wood utilization volumes by alternative which would result from technical assistance to loggers and processors.

Figure 2.13

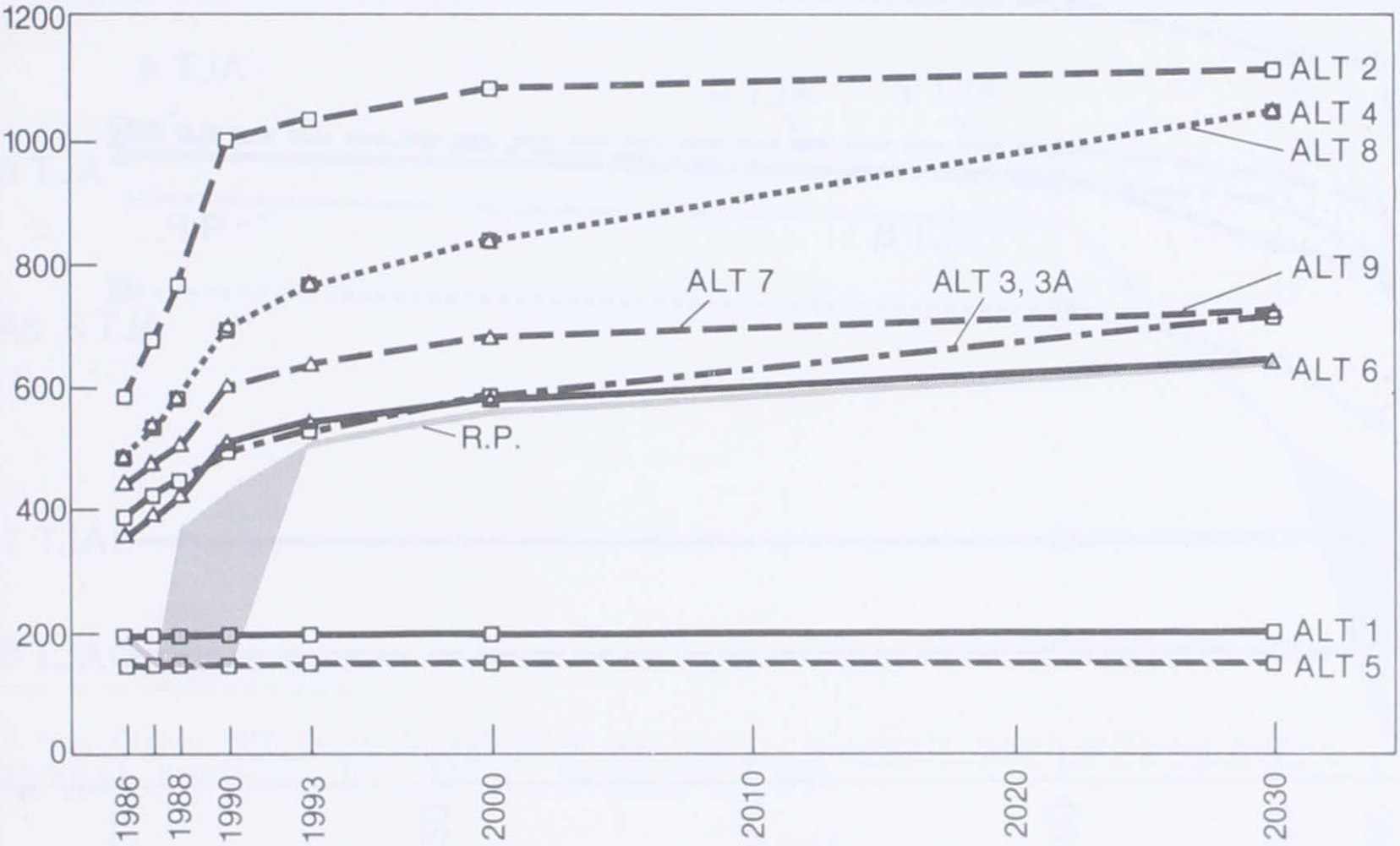
Reforestation Activities by Alternative (S&PF)



The shaded portion represents the range between the High and Low Bounds of the Recommended Program.

Figure 2.14

Timber Stand Improvement Activities by Alternative (S&PF)



The shaded portion represents the range between the High and Low Bounds of the Recommended Program.

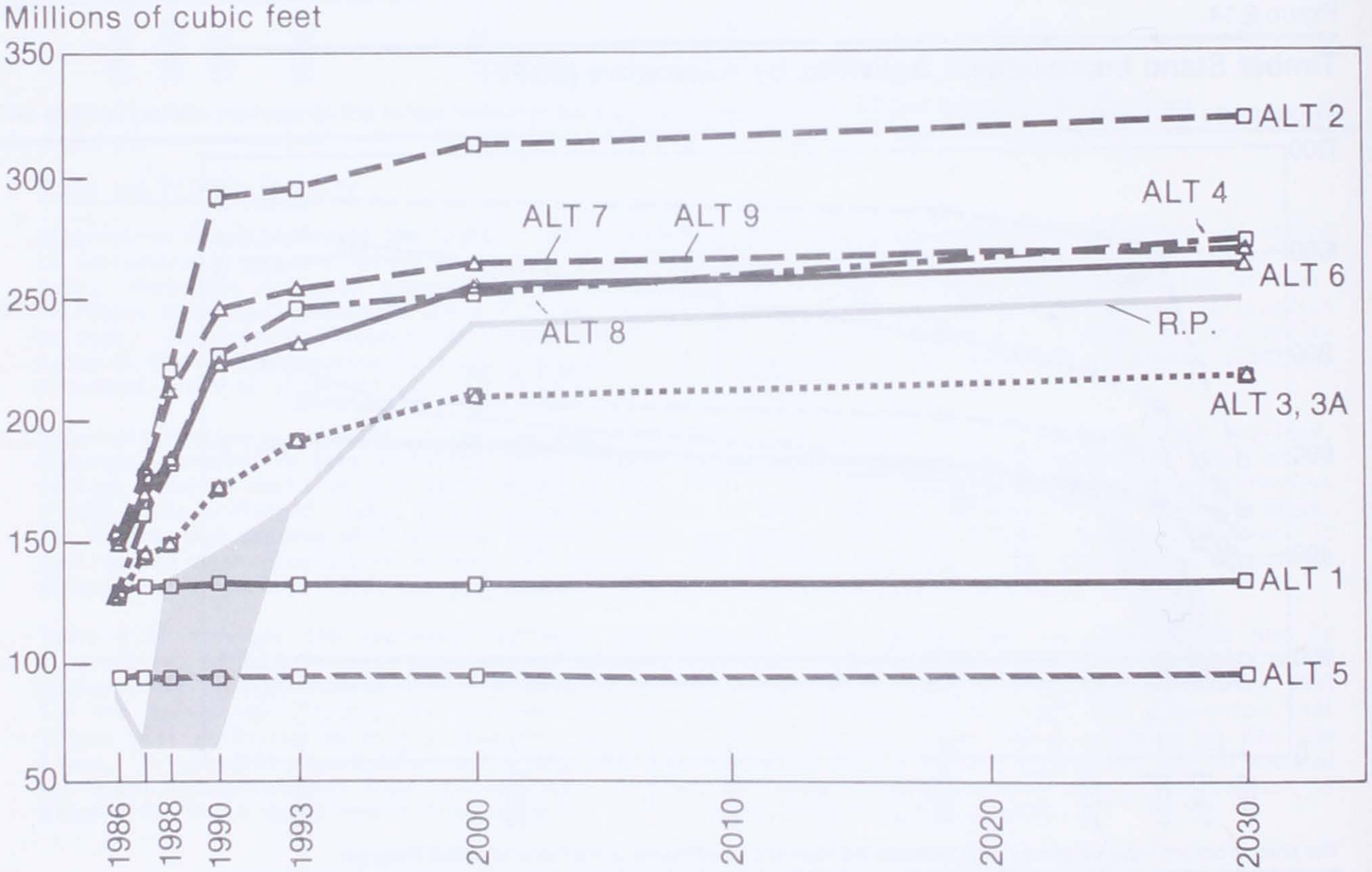
Table 2.37--Average Annual Increase in Timber Production--S&PF Activities by Alternatives[1]

Alternative	Softwood					Hardwood				
	Year					Year				
	2000	2010	2020	2030	2040	2000	2010	2020	2030	2040
	(Million Cubic Feet)					(Million Cubic Feet)				
Recommended Program										
Low Bound	50	400	1095	1930	3548	12	83	169	260	310
High Bound	127	520	1270	2195	4029	27	93	190	284	339
1	48	162	397	875	1626	11	48	85	118	134
2	262	956	1863	3357	6155	55	210	400	532	607
3 & 3A	98	405	907	1683	3014	31	128	233	331	397
4 & 8	153	648	1377	2467	4350	38	158	295	420	500
5	34	97	275	631	1147	8	31	62	87	98
6	149	664	1442	2524	4540	34	136	252	357	415
7 & 9	162	689	1474	2642	4749	48	180	331	478	534

[1] The additional wood expected to be available for harvest because of cooperative (FIP, ACP, and RFA) reforestation and timber stand improvement on nonindustrial private land during the period 1986-2030. No volume deduction was made for low-value hardwood species displaced by softwood management. The composition of the increased volumes of softwood and hardwood timber, by species, size, and age class would also result in substantial value increases. Timber outputs from timber stand improvement and reforestation investment beginning in 1986 become available in decade 2000.

Figure 2.15

Improved Utilization of Wood by Alternative (S&PF)



The shaded portion represents the range between the High and Low Bounds of the Recommended Program.

Research

Research support of the timber goal has the greatest emphasis in Alternatives 2, 6, 7, 8, and 9. Of these Alternatives, 6 and 8 have the highest funding (table 2.34). Alternative 4 would provide moderate support to the goal, followed by Alternatives 1 and 5 which provide relatively low levels of support. At the Low Bound, Recommended Program funding is slightly higher than Alternative 5 in 1986, declines to the Alternative 5 level in 1987, remains at that level through 1990, and then rises to slightly above Alternative 1 by 2030. High Bound funding rises gradually after 1987 to the Alternative 1 level by 1993, and to midway between Alternatives 1 and 3 by 2030.

All alternatives would have relatively strong emphasis on biological research and genetic engineering research. This emphasis was also recommended as a high priority goal for USDA research in the report to the Secretary of Agriculture--FY 1985 Priorities for Research, Extension, and Higher Education--prepared by The Joint Council on Food and Agricultural Sciences, 1983. All alternatives would have a relatively high and sustained level for forest inventory and economics research to assess long-term timber supply and demand requirements.

Research on timber processing and utilization would have relatively strong emphasis in Alternatives 2, 6, 7, 8, and 9. Potential outputs from seven major Forest Service research technology developments in timber processing and utilization were evaluated by the University of Minnesota study cited earlier in this chapter. The technologies studied were developed primarily at the Forest Service's Forest Products Laboratory and involved the processing of softwood lumber, plywood, structural flakeboard, and the manufacture of pulp and paper from both softwoods and hardwoods. This study also indicates that highly favorable rates of return can be expected from utilization research investments.

A Forest Service case study of potential outputs and benefits from selected types of timber research indicates strong potential for increasing timber yields through research investments. This same study also shows strong potential for mitigating timber needs through improved utilization development.[1]

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1 Row, Clark. RPA Research Evaluation Case Study: Research's Impact on Forest Outputs. USDA Forest Service. Washington, D.C. 108 p. Unpublished. 1983.

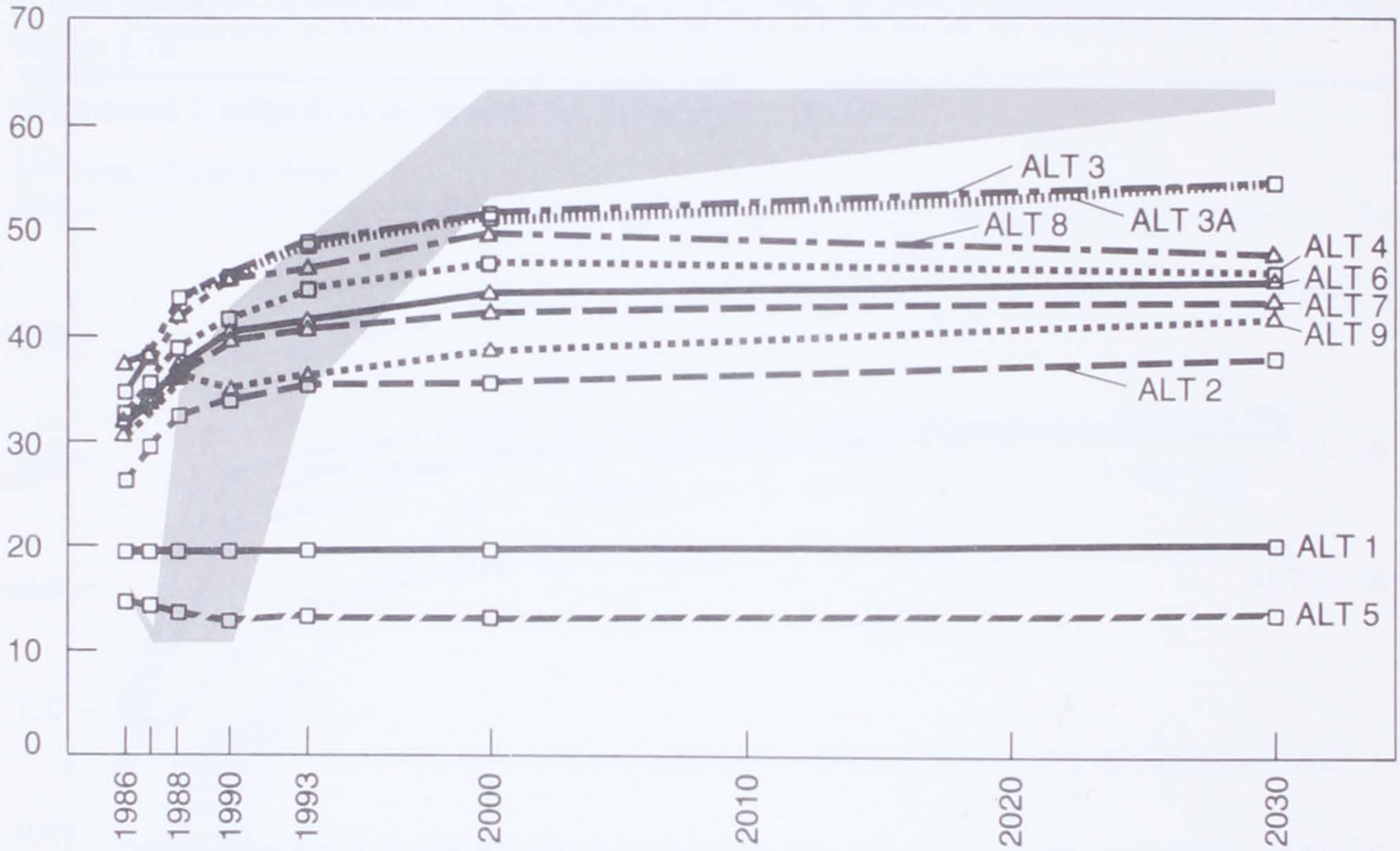
National Forest System

A variety of activities address the wildlife and fish goal on NFS lands. These activities include fish ladders, seeding and planting, prescribed burning, and water developments. They are coordinated with other resource activities such as timber harvesting, livestock grazing, road and trail construction and maintenance, recreation developments and activities, resource inventory, and land management planning. They are accomplished in cooperation with State and Federal agencies having responsibility for fish and wildlife. As an example, the Salmon and Steelhead Opportunities Program, a cooperative effort with State fish and wildlife agencies, provides a benchmark which estimates the unconstrained habitat capability of the NFS to produce salmon and steelhead. The Recommended Program level for wildlife and fish user days is below Alternative 1 in 1986 and at the Low Bound declines below the Alternative 5 level by 1990, and then increases above Alternative 1 by 2030. The High Bound steadily increases from 1986 to a level above Alternative 7 by 2030. The pounds of commercial fish produced is slightly lower than Alternative 1 in 1986, and remains that way through 1990 at the Low Bound which then rises above Alternative 1 by 2030. The High Bound gradually rises to approach the Alternative 6 level by 2030.

Figure 2.16 illustrates the relative magnitude of wildlife and fish improvement activities. In addition, each alternative includes appropriate activities, coordinated with other resource uses, to manage and maintain existing wildlife improvements.

Figure 2.16

Wildlife and Fish Improvement Activities by Alternative (NFS)



The shaded portion represents the range between the High and Low Bounds of the Recommended Program.

State and Private Forestry

The Cooperative Forestry Assistance Act emphasizes the importance of improving and maintaining wildlife and fish habitat on the Nation's non-Federal forest lands. Habitat improvement is significant among the multiple uses for which the Rural Forestry Assistance program provides technical and related assistance based upon multipurpose forest management plans. An important part of this assistance involves identification of threatened and endangered animal and plant species and subsequent protection and maintenance of their habitat in accordance with the Threatened and Endangered Species Act.

The amount of assistance targeted for wildlife and fish in Alternative 1 is 236,000 acres. Alternatives 4 and 8 would provide the highest level of assistance--1.66 million acres by the year 2030--equivalent to the 1980 Recommended Program. Assistance for wildlife and fish would be moderately higher than the Alternative 1 level under Alternatives 2, 3, 3A, 6, 7, and 9, and lowest--170,000 acres--in Alternative 5. The Recommended Program is below Alternative 5 at 154,000 acres in 1986, and remains below that alternative through 1990 at the Low Bound. The High Bound will provide assistance on 322,000 acres in 1990. Both the High and Low Bounds will provide wildlife and fish-related assistance on 556,000 acres by 2030, close to levels indicated in Statewide forest resources planning. The high level of emphasis would occur mostly in the East where private forest lands comprise a large portion of the total, landowner interest is high, and hardwood stands favor a large variety of both game and nongame species.

Research

Wildlife and fish research investments would be at a relatively high level in Alternatives 3, 3A, 6, 7, and 8 as compared with Alternatives 1, 2, 4, 9, and the Recommended Program. In the higher funding levels, medium or high emphasis would be placed on research initiatives of old-growth wildlife habitat; threatened, endangered, and sensitive species; and on anadromous fish. In Alternative 5, the lowest fuding level, research on monitoring species sensitive to habitat changes would be reduced significantly nding level, research on monitoring species sensitive to habitat changes would be reduced significantly --down more than 30 percent from 1980. Research on successional patterns and predictive habitat models would also be reduced. In Alternative 9, research into habitat requirements for endangered species would be increased. Funding for the Recommended Program is below Alternative 1, the second lowest alternative, in 1986; it remains at that level through 1990 at the Low Bound but is above the Alternative 1 level by 2030. High Bound funding rises above Alternative 1 in 1988, and approaches Alternatives 2, 4, and 9 levels by 2030.

International Forestry

All alternatives offer new management information from research which can be used in international forestry activities--including silviculture, reforestation and the relationship between tree species and planting methods, tree improvement, wildlife habitat (endangered species), and the management of natural and planted tropical forests. But there are also significant differences among alternatives. Alternative 5 would provide little cooperative research and limited information on watershed management, ecological relationships, and agroforestry (managing tree farms). Alternatives 1, 2, 3, and 4 would provide information about the ecological relationships of vegetation, soil, water, and climate; watershed management; and agroforestry. Alternatives 2, 3, 3A, 4, 6, 7, 8, 9, and both Bounds of the Recommended Program would provide more new information about fuelwood plantings. Alternatives 2, 3, 3A, and 4 would gain initial information about intensive culture of plantation and nutrient cycling. Alternative funding levels are shown in table 2.38.

Alternatives 6, 7, 8, and the High Bound of the Recommended Program would provide twinned institute relationships (work with similar institutions in other countries) early in the planning period for developing countries and extensive information on agroforestry, watershed management, intensive culture of plantations and ecological relationships of soil, water, vegetation, and air--including nutrient cycling. Cooperative research would expand rather rapidly under Alternatives 4, 6, 7, 8, and the Recommended Program.

All of the alternatives would provide new information on the basic properties of tropical forest species and protection of wood in use. Alternatives 1 and 5 would provide only limited information and evaluation of U.S. and international tropical species timber markets with developing countries. Alternatives 2, 3, 3A, 4, 6, 7, 8, 9, and the Recommended Program would provide extensive information for evaluation of U.S. and international timber markets and light-frame structures.

Alternatives 2, 3, 3A, 4, and 9 would also provide partial information on growth properties and processing methods, of planted and natural tropical tree species, and grading standards required for increased world timber trade. Under Alternatives 6, 7, 8, and the High Bound more extensive information would be provided on research described in Alternatives 2, 3, 3A and 4.

Under Alternatives 1 and 5, Forest Service in-kind contributions through the Forestry Support Program to AID and Peace Corps projects would fall short of the need. International assistance and training would be limited in scope.

Training and technical assistance in Alternatives 2, 3, 3A, 4, and 9 would: provide for a modest increase over the activities described for Alternatives 1 and 5; initiate training and assistance in Latin America, Africa, and southeast Asia; and, begin an Associate Experts program. Alternatives 6, 7, 8, and the High Bound would provide strong programs of training and technical assistance in all of the activities described above. Additional information on international forestry is presented in appendix J.

Table 2.38--International Forestry Funding by Alternative and Year

Millions of 1982 dollars

Recommended Program			Alternatives				
Year	Low Bound	High Bound	1	2,3,3A, 4 and 9	5	6 and 8	7
1986	6.2	6.2	4.6	5.3	3.4	6.8	6.1
1990	6.2	7.9	4.6	6.2	3.4	9.5	7.9
2000	8.1	10.9	4.6	7.7	3.4	14.0	10.9
2030	10.1	14.9	4.6	9.7	3.4	20.0	14.9

Protection and Support

Fire Protection

National Forest System.--Fire management is measured by the Fire Management Effectiveness Index (FMEI). The index represents the total cost plus the net value change of protecting 1,000 acres. The lower the index the better. This index may be used to compare the effectiveness of alternative fire management activities within a given area. For example, the more effectively the appropriated Forest Fire Protection fund is used, the lower will be the suppression costs and the resource losses. In all alternatives, the Forest Service would continue to use prescribed fire to provide efficient fire protection and contribute to resource management objectives by enhancing grazing capacity and improving watersheds.

National Forest System fire management is responsive to direction in National Forest plans in each alternative. The FMEI would improve over time for all alternatives, except for Alternative 5. At the Low Bound, the FMEI is higher than Alternative 1 in 1986 and remains at that proportionate level through 2000; by 2030, it drops slightly below Alternative 1. The High Bound drops slowly from the 1986 level to near the Alternative 1 level by 1990. Both Bounds continue to drop after 1990 with each approaching the Alternative 9 level by 2030. Figure 2.17 illustrates the FMEI by alternative.

State and Private Forestry.--Alternatives 1, 2, 3, 3A, 5, 7, and 9 provide efficient protection directly commensurate with the value of the resources and products protected. These alternatives provide financial, technical, and related assistance to the States as necessary to encourage changes in State fire programs and cooperation among States to enhance the aggregate efficiency of fire protection. The overall program may not call for increases or decreases within alternatives. However, increases or decreases may occur regionally within each of these alternatives, based on determined protection efficiency.

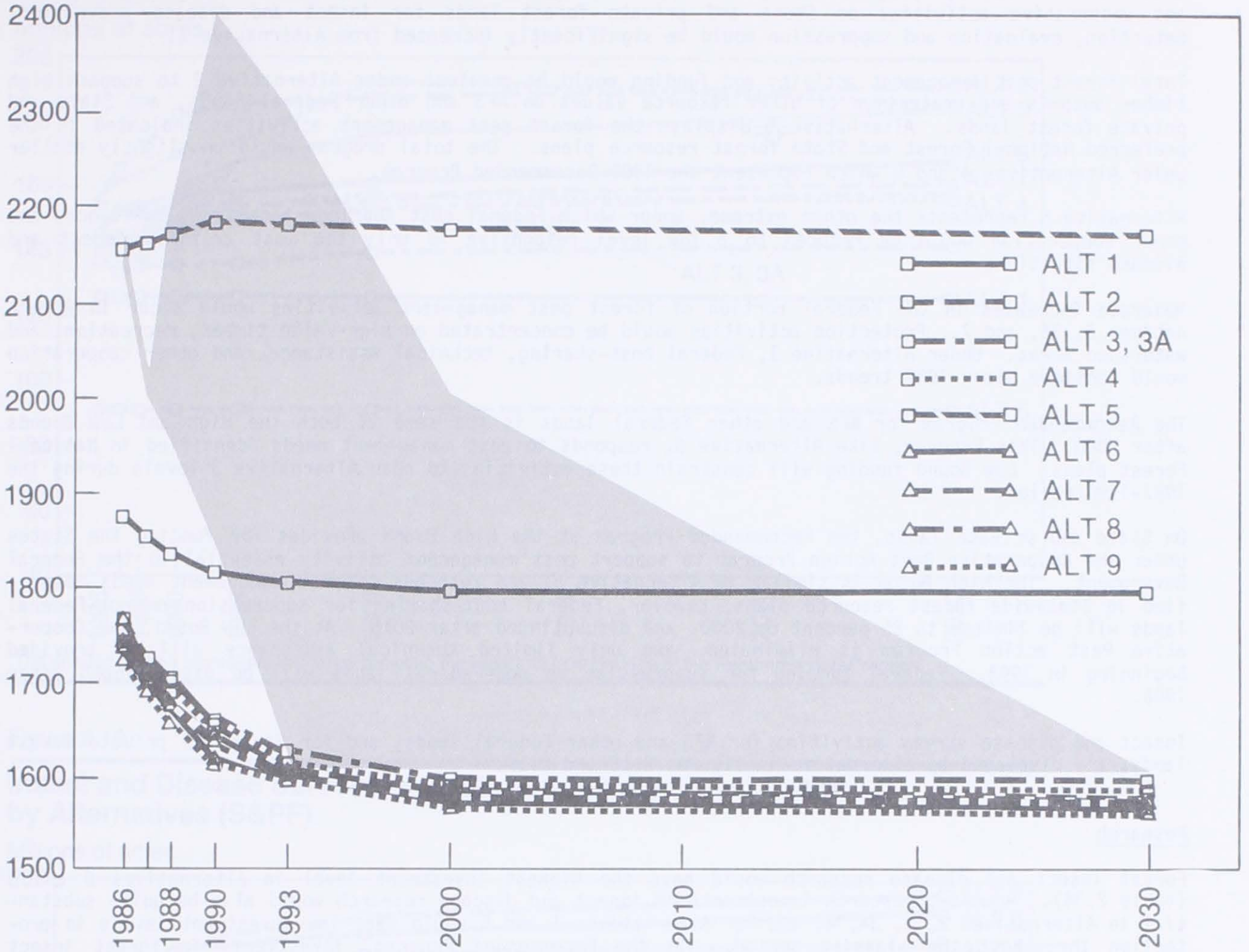
Alternatives 4, 8, and 6 were not constructed as economically efficient alternatives but were based on other measures of achievement, such as estimates of intolerable losses, maximum acres burned, and timing of fire control. Therefore, they are not efficient alternatives overall but each may include segments which are efficient. Alternatives 7 and 9 would provide the level of fire protection commensurate with production of resource outputs at economically efficient levels. Alternative 1 is the level of fire protection activity required if the current level of resource production is generated from non-Federal wildlands. Alternative 2 reflects the increased response in protection necessary if production is increased to the maximum economic level. Alternatives 3 and 3A provide the efficient response to the resource production at a level midway between Alternative 1 and Alternatives 4 and 8.

The Recommended Program at the High Bound is aimed at development of economically efficient individual State wildland fire-protection programs, improved efficiency through cooperation among States, and improved efficiency among States and Federal agencies. Protection at the High Bound is commensurate with the value of natural resources that could be damaged or destroyed by fire. At the Low Bound, Forest Service involvement in the development of an efficient State fire protection program would be lessened. Financial assistance to States is eliminated after 1986, and greater emphasis is placed on local units to fulfill their own fire protection responsibilities.

Figure 2.17

Fire Management Effectiveness Index by Alternatives (NFS)

Dollars per 1,000 acres protected



The shaded portion represents the range between the High and Low Bounds of the Recommended Program.

Research

Fire research would generally be funded higher over the planning period for Alternatives 6 and 8 with somewhat lower funding levels in Alternatives 2, 3, 3A, and 4. Funding for fire research in Alternatives 7 and 9 would be funded higher early in the planning period, starting at the Alternative 6 and 8 level, but would then rise more slowly to 2030. In Alternatives 1 and 5, funding would be relatively low over the entire planning period. Recommended Program funding in 1986 is at the Alternative 1 level, and it declines to slightly above Alternative 5 in 1987. The Program at the Low Bound remains at the 1987 level through 1990 and rises above Alternative 1 by 2030. High Bound funding returns to the Alternative 1 level in 1988, and gradually increases to near Alternative 7 by 2030.

Under all alternatives, research would include studies related to fire prevention, fire control, and more efficient fire management methods. Research in all alternatives would seek to improve methods of protecting and controlling fires resulting from both human and natural hazards. In Alternatives 2, 7, and 9, the emphasis would be on prescribed burning to dispose of slash as well as to protect plantations and second-growth forests. Research in these alternatives would also strive to develop more efficient methods of controlling undesirable vegetation. Research would also be conducted on the economics of various fire management strategies. In Alternative 3 and 3A, the role of fire in wilderness areas would be evaluated. Also in Alternative 3 and 3A, fire would be evaluated relative to its potential in wildlife habitat management. The higher funded alternatives would emphasize both the commodity and amenity oriented research. The higher funded alternatives would also have increased research efforts aimed at developing improved methods of air and ground attack of wildfires.

Forest Pest Management

State and Private Forestry.--Integrated pest management practices would be used in all alternatives. Under Alternatives 2, 4, 6, 8, and 9, forest pest management activities on NFS and other Federal lands and cooperative activities on State and private forest lands for insect and disease prevention, detection, evaluation and suppression would be significantly increased from Alternative 1.

Total forest pest management activity and funding would be greatest under Alternative 2 to support high timber outputs and protection of other resource values on NFS and other Federal lands, and State and private forest lands. Alternative 6 displays the forest pest management activities indicated in the preferred National Forest and State forest resource plans. The total program would be slightly smaller under Alternatives 4 and 8 which represent the 1980 Recommended Program.

Alternative 5 represents the other extreme, under which Federal cost sharing, technical assistance, and other cooperation would be reduced to a low level responsive to only the most critical insect and disease situations.

Moderate increases in the Federal portion of forest pest management activities would occur in Alternatives 3, 3A, and 7. Protection activities would be concentrated on high-value timber, recreation, and watershed areas. Under Alternative 1, Federal cost-sharing, technical assistance, and other cooperation would continue along 1982 trends.

The Recommended Program for NFS and other Federal lands is the same at both the High and Low Bounds after 2000. This Program, like Alternative 6, responds to pest management needs identified in National Forest plans. Low Bound funding will constrain these activities to near Alternative 3 levels during the 1987-1990 period.

On State and private lands, the Recommended Program at the High Bound provides for funding the States under the Cooperative Pest Action Program to support pest management activity essential to the Federal Government. The High Bound is similar to Alternative 6, and responds to pest management needs identified in Statewide forest resource plans, however, Federal cost-sharing for suppression on non-Federal lands will be limited to 25 percent by 2000, and discontinued after 2015. At the Low Bound, the Cooperative Pest action Program is eliminated, and only limited technical assistance will be provided beginning in 1993. Federal funding for suppression on non-Federal lands will be discontinued after 1986.

Insect and disease survey activities for NFS and other Federal lands, and for State and private forest lands, are displayed by alternative in figures 2.18 and 2.19.

Research

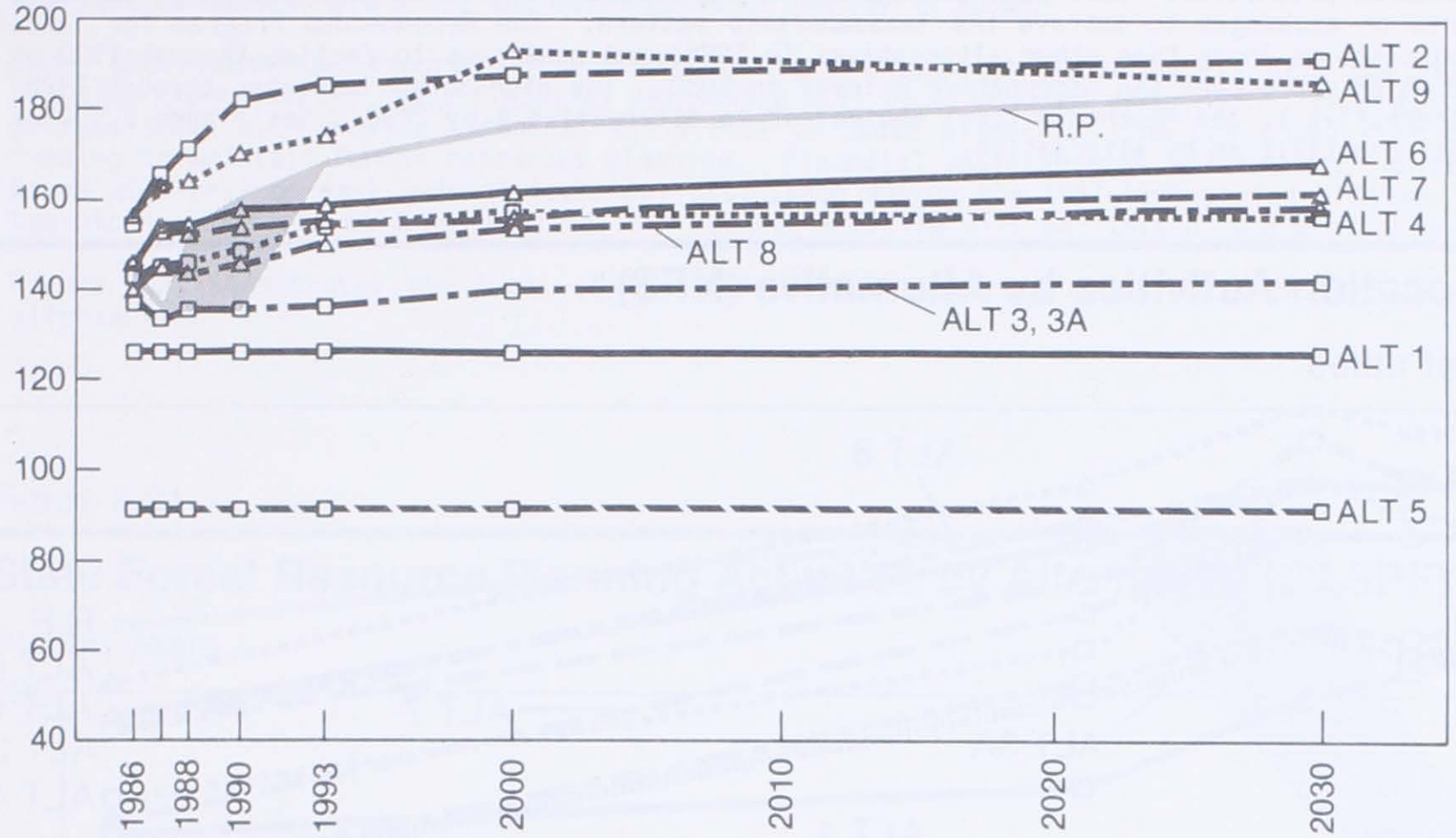
Forest insect and disease research would have the highest investment level in Alternatives 6 and 8 (table 2.34). However, research investments in insect and disease research would also be quite substantial in Alternatives 2, 3, 3A, 4, and 7. Alternatives 1 and 5 would have low investment levels in protection throughout the planning period. In the Recommended Program, investments in forest insect research will remain below the Alternative 5 level until 1990 and then rise slowly to slightly below Alternative 1 level in the Low Bound, and slightly above that alternative in the High Bound by 2030. High Bound funding for disease research remains at about the Alternative 1 level until 1990 and then rises slowly for the remainder of the planning period, but remains below the next higher alternative. Low Bound funding for disease research declines from Alternative 1 during the 1987-1990 period.

In Alternatives 1 and 5, the Recommended Program, and especially in Alternative 9, the emphasis would be on fundamental insect and disease research. This research would be primarily directed toward NFS needs. The focus in Alternative 9 would be narrowed to commercially important species. In the Recommended Program and Alternative 5, the research would deal with tradeoffs and treatments necessary to meet requirements necessary for protection of the resource base.

In the higher-funded alternatives, especially 6, 7, and 8, multidisciplinary research efforts would be emphasized to serve a wider range of users with commodity and noncommodity forest resource concerns. For example, integrated pest management research would seek to develop new tactics (mechanical, biological, silvicultural and chemical) for the prevention or suppression of major forest pests. This technology would be packaged to integrate pest management systems into multiresource forest management plans and practices.

Figure 2.18

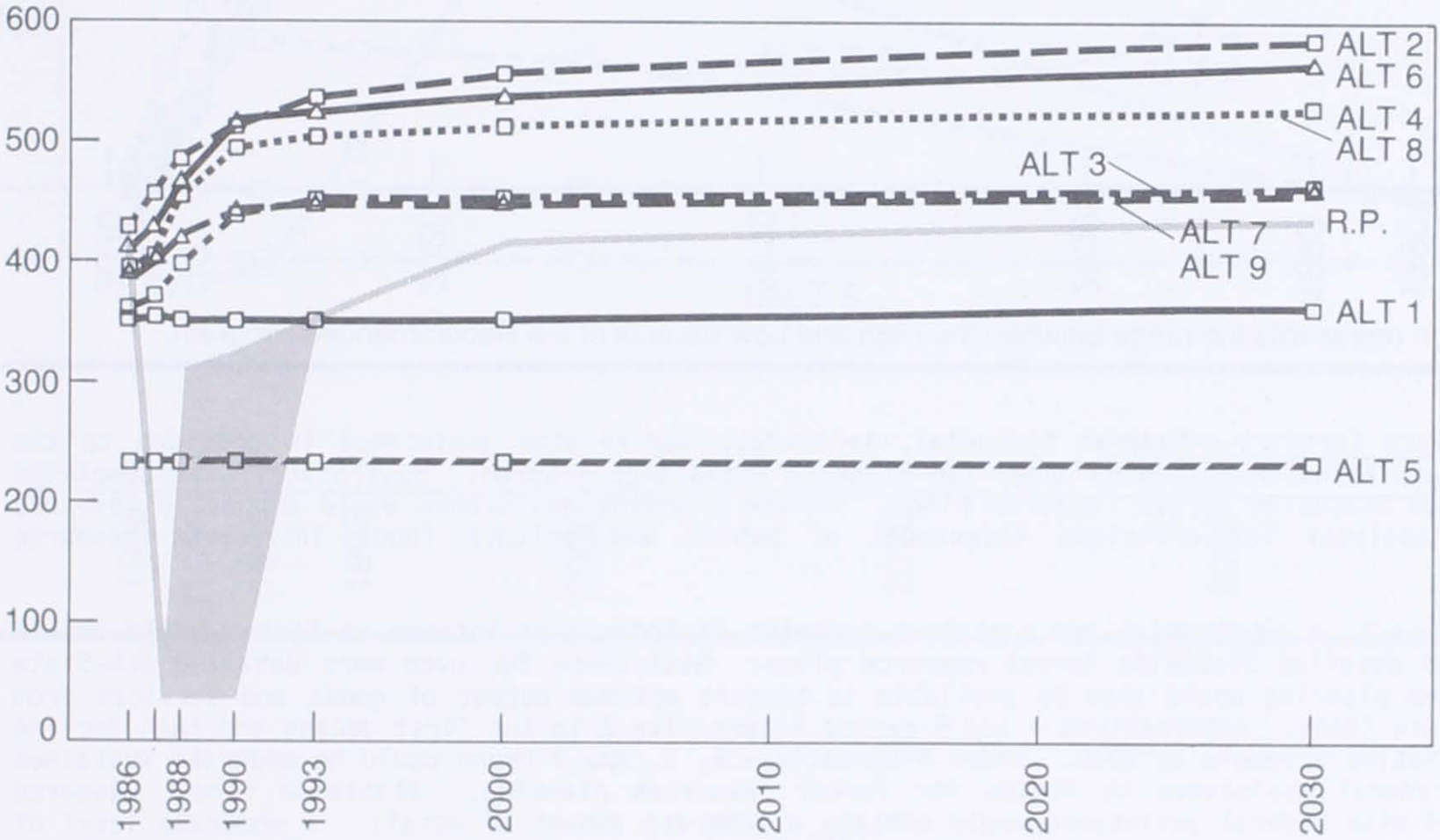
Insect and Disease Surveys on National Forest System and Other Federal Lands by Alternative (S&PF)



The shaded portion represents the range between the High and Low Bounds of the Recommended Program.

Figure 2.19

Insect and Disease Surveys on State and Private Forest Lands by Alternatives (S&PF)



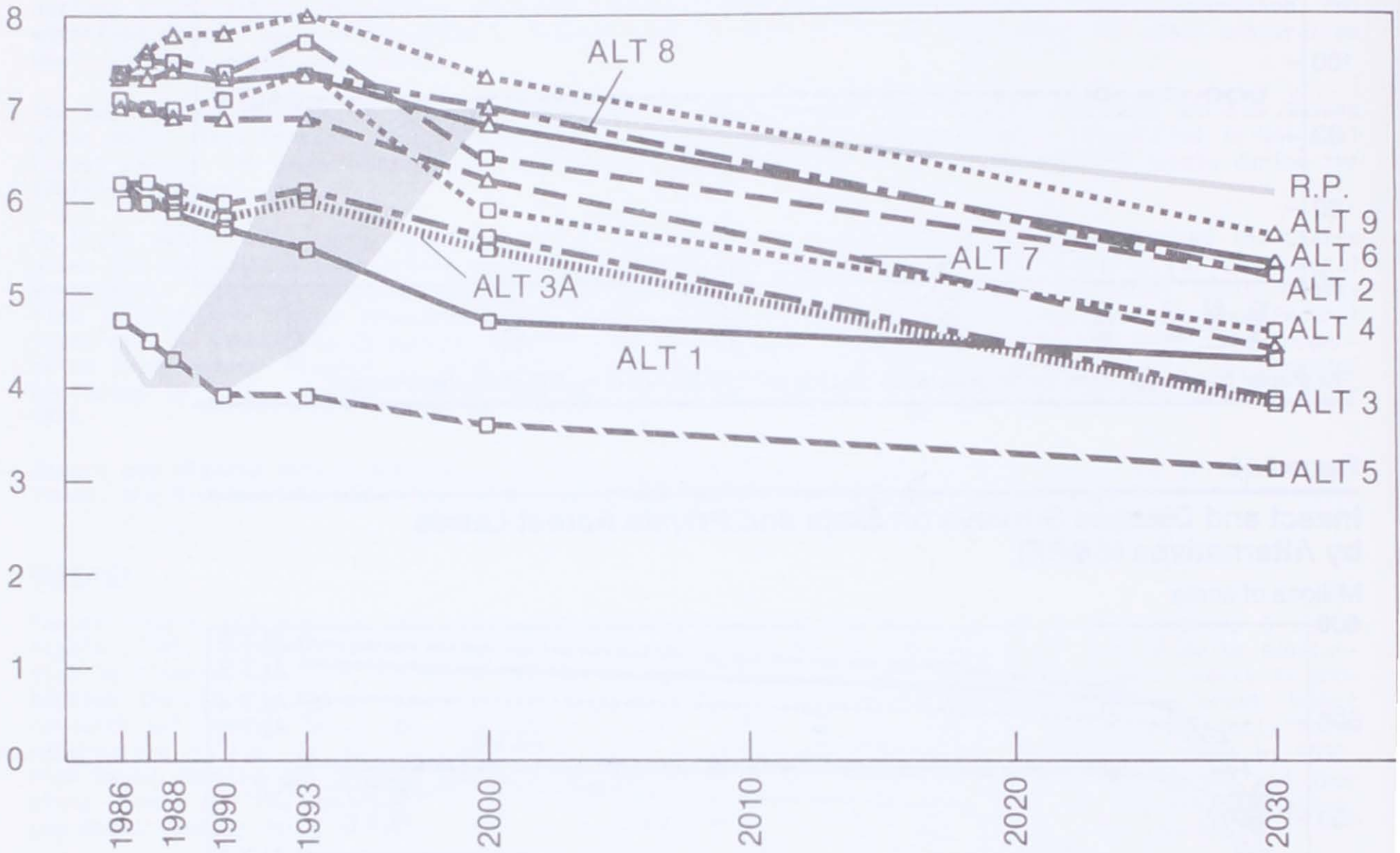
The shaded portion represents the range between the High and Low Bounds of the Recommended Program.

Lands

National Forest System.--In all alternatives, the Forest Service acquisition activities will be limited. The activities will be directed toward acquisitions in Congressionally-mandated areas with de-emphasis on general acquisitions under the Weeks Act and composite inholding cases. The private land that would be acquired is commensurate with the resource emphasis in each alternative to improve management and facilitate resource production. Savings in management costs exceed the cost of acquisitions. Emphasis would be placed on exchanges to improve the landownership pattern. The Recommended Program for lands activities and costs is lower than other alternatives in 1986, and continues to decline through 1990 at the Low Bound which approaches the Alternative 9 level in 2030. The High Bound increases through 1990, similar to Alternative 1, and reaches a level equivalent to Alternative 4 by 2030. See figure 2.20 for landline location activities by alternative.

Figure 2.20

Landline Location Activities by Alternative (NFS)



The shaded portion represents the range between the High and Low Bounds of the Recommended Program.

State and Private Forestry.--Federal financial, technical, and related assistance is provided to the States for forest resources planning under the Planning Assistance Program. Most States have completed first-generation Statewide forest resource plans. Future planning assistance would emphasize resource and economic analyses for efficient investment of public and private funds in forest resource management.

Under Alternative 2, a substantial and sustained increase in Federal assistance to States would result in thorough and detailed Statewide forest resource plans. Assistance for even more detailed sub-State forest resources planning would also be available to support optimum output of goods and services from State and private lands. Alternatives 4 and 8 exceed Alternative 2 in the first decade and then decline to about Alternative 1 levels by 2030. Under Alternatives 6, 7, and 9 there would be moderate sustained increases in Federal assistance to States for forest resources planning. Statewide forest resource plans developed with Federal assistance would contain a moderate amount of detail. A moderate level of assistance for sub-State forest resources planning would also be available. Under Alternatives 3 and 3A, planning assistance to States would be provided at the Alternative 6, 7, and 9 levels until 1990,

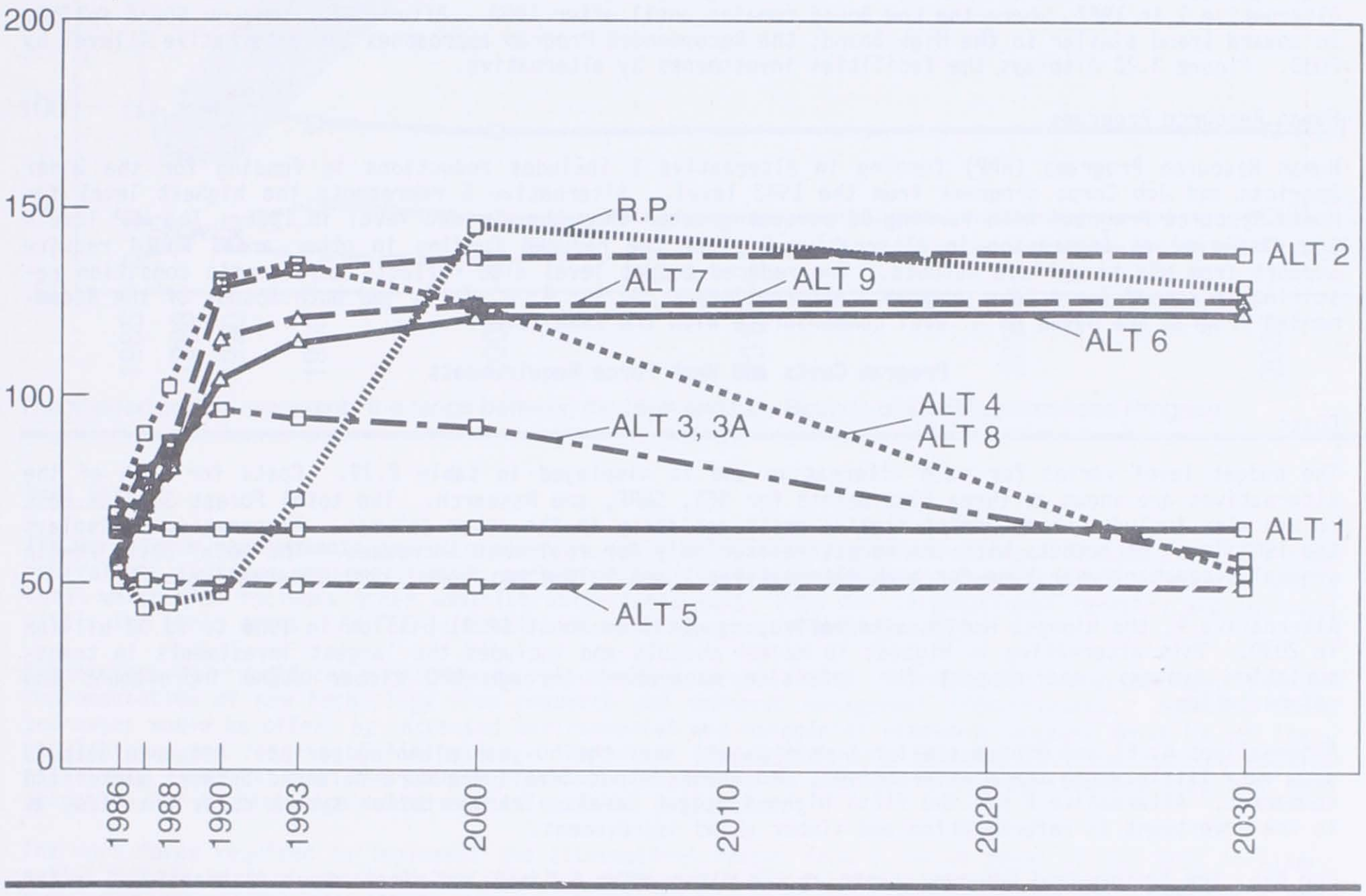
and then decline to the current level by 2030, as in Alternatives 4 and 8. A low level of assistance for sub-State planning would be available. Alternative 1 would continue planning assistance at the current low level; however, under Alternative 5, Federal assistance for Statewide forest resource plans and sub-State planning would be available only on a limited basis. Plans dependent upon Federal assistance for development would be more general than under the other alternatives. The Forest Service would continue, under all alternatives, to encourage coordination among Statewide forest resources planning, NFS land management planning, and development of the RPA Program.

Under the Recommended Program, High Bound funding will support approximately half the estimated State planning expenditures; State financial assistance will be eliminated after 1993. Federal staffing of 20 professionals will provide technical assistance to State planners. The Low Bound will rely on State funding to maintain forest resources planning. Financial assistance is eliminated. Moreover, the Low Bound will rely on past Federal technical assistance during the 1987-1990 period. After 1990, Federal technical assistance will be provided, but Federal staffing will be limited to 8 professionals.

Figure 2.21 illustrates the level of Statewide forest resources planning efforts in person years by alternative.

Figure 2.21

State Forest Resource Planning Activities by Alternative (S&SPF)



The facilities activities consist of capital investment and operation and maintenance work which provide general support to the resource elements. These activities include:

Building construction, reconstruction, and maintenance

Water and waste systems

Dams management and maintenance

Road construction, reconstruction, and maintenance

General transportation planning

General purpose nonproject mapping

Road construction/reconstruction is lowest in Alternative 5 and highest in Alternative 2 over the entire planning period (table 2.32). The Recommended Program starts in 1986 slightly below Alternative 5 and by 2030 exceeds Alternatives 1, 3, 3A, and 5 (it approximates Alternative 7) at the Low Bound, and is lower than Alternatives 2 and 9, and approximates Alternative 4, at the High Bound. In 1986, about 45 percent of the road miles in the Recommended Program are new construction and 55 percent are reconstruction. By 2030, at the High Bound this ratio is 20 percent construction and 80 percent reconstruction; and at the Low Bound 30 percent construction, 70 percent reconstruction.

In Alternatives 1 and 5, capital investment is substantially curtailed. In the reconstruction activity, this represents substantial disinvestment. Operation expenses in these alternatives, such as maintenance or preventive maintenance, involve much higher risk management for health and safety. All other operational support activities in this element are held to an absolute minimum commensurate with support requirements. The Recommended Program starts slightly higher than Alternative 1 in 1986, declines from Alternative 1 in 1987, where the Low Bound remains until after 1990. After 1990, the Low Bound follows an upward trend similar to the High Bound; the Recommended Program approaches the Alternative 4 level by 2030. Figure 2.22 displays the facilities investments by alternative.

Human Resource Programs

Human Resource Programs (HRP) funding in Alternative 1 includes reductions in funding for the Older American and Job Corps programs from the 1982 level. Alternative 5 represents the highest level for Human Resource Programs with funding 52 percent greater than the current level in 1986. The HRP levels are displayed as increasing in Alternative 5 since the reduced funding in other areas would require support from HRP to achieve outputs. The reduced budget level also reflects an economic condition resulting in a need for a jobs program. Alternatives 2, 3, 3A, 4, 6, 7, 8, and both Bounds of the Recommended Program are based on a level commensurate with the 1982 level.

Program Costs and Work Force Requirements

Costs

The budget level varies for each alternative and is displayed in table 2.39. Costs for each of the alternatives are shown at three time points for NFS, S&PF, and Research. The total Forest Service cost column also includes other administrative costs not shown in the other columns. Alternative 1 displays the 1982 level of outputs with the budget revised only for real cost increases. The total costs remain generally constant over time for both Alternatives 1 and 5, the two lowest cost alternatives.

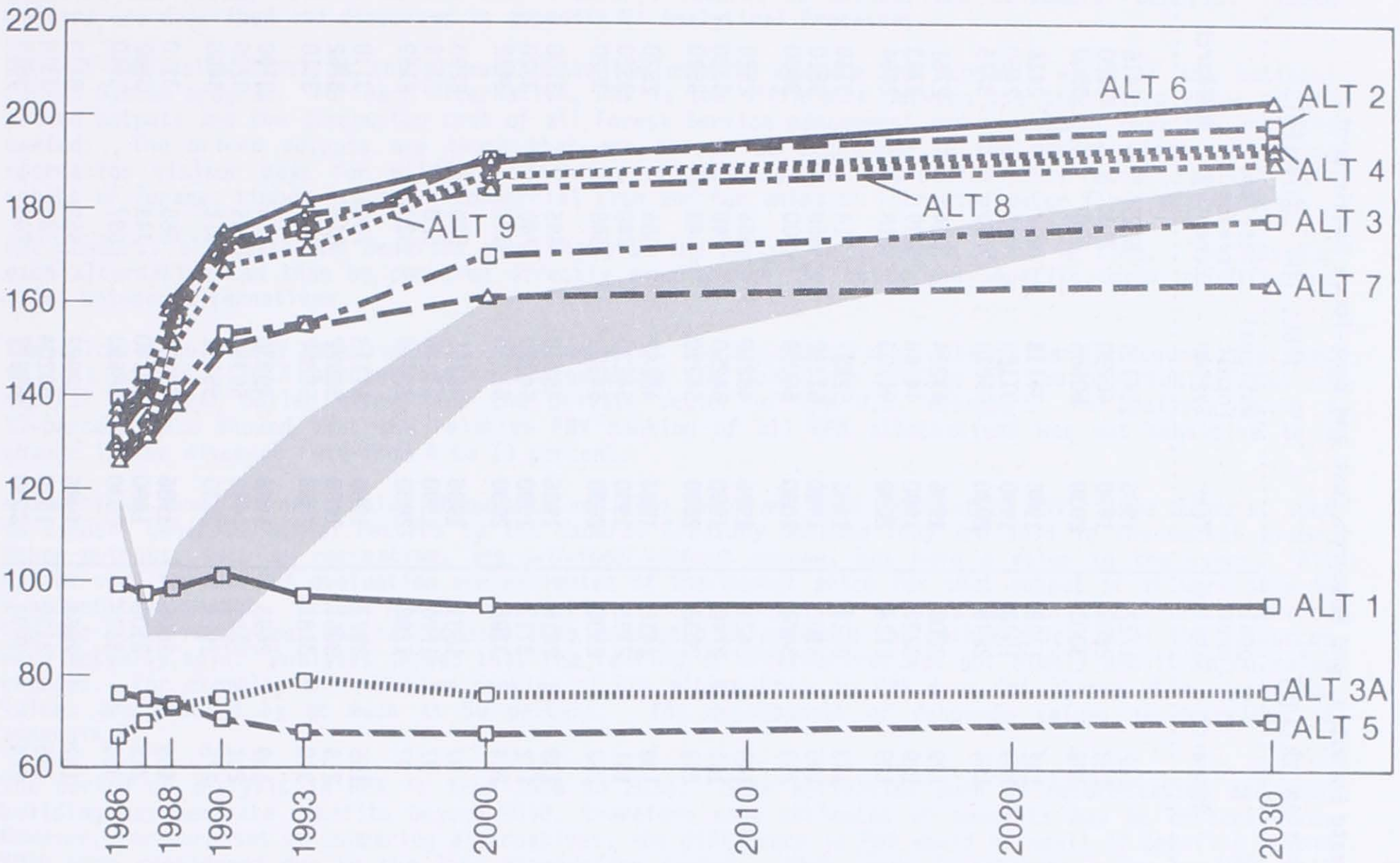
Alternative 9, the highest budget alternative, ranges from about $2.31 billion in 1986 to $3.02 billion in 2030. This alternative is highest in market outputs and includes the largest investments in transportation systems, and support for intensive management through NFS timber stand improvement and reforestation.

Alternatives 4, 6, and 8 have similar budget levels over the 50-year planning period. Resource outputs also vary little among these alternatives, and their output levels are more balanced between market and nonmarket. Alternative 7 has the fifth highest budget level. Transportation system costs are less, as is the investment in reforestation and timber stand improvement.

For NFS, the Recommended Program starts at the Alternative 5 level and rises above Alternative 1 after 1990. By 2030, the Recommended Program ranks about in the middle of all alternatives. State and Private Forestry costs in 1986 are lowest for the Recommended Program; the Low Bound remains lowest for the entire planning period, and the High Bound exceeds only Alternatives 5 and 1. The research pattern is similar to S&PF, except Low Bound costs rise above Alternatives 1 and 5 after 1990.

Figure 2.22

Facilities Investments by Alternative



The shaded portion represents the range between the High and Low Bounds of the Recommended Program.

Work Force

The work-force requirements are also shown in table 2.39 for three time periods. The FTE, or full time equivalent, includes seasonal, other part-time, and full-time employees for NFS, S&PF, Research and a total which also includes other administrative employees. FTEs for international forestry are included within the three areas. An FTE is equal to one person-year of employment.

Projections for workforce requirements assume that productivity increases will be achieved through implementation of new technology from research and improved management effectiveness. However, these increases would be offset by increased environmental and managerial standards brought about by new laws, regulations, and results of litigation. Therefore, the relationship between FTEs and funding remains relatively constant over the planning period. Expansion in the use of private contracting has been accounted for in historical data used to make the projections.

The work force required to implement the alternatives ranges from a low of about 39,000 FTEs in Alternative 5 to a high of about 57,000 FTEs for Alternative 9 in 1986. Work-force requirements increase from the present for most alternatives except 1 and 5, with Alternative 9 showing a 2030 level of approximately 73,000 FTEs. The Recommended Program starts at about the Alternative 5 level in 1986, but the Low Bound declines significantly to a point lower than any of the other alternatives in 1990. By 2030, the Low Bound is back up to an Alternative 8 level of FTEs. The High Bound shows an increase in FTEs from 1990 to 2030 similar to Alternative 2.

TABLE 2.39--National Forest System, State and Private Forestry, and Research Cost and Work-force Requirements.

Alternative	Year	(MILLIONS OF 1982 DOLLARS) National Forest System	State and Private Forestry	Research	Total Forest Service	Year	(FULL TIME EQUIVALENTS) National Forest System	State and Private Forestry	Research	Total Forest Service
RECOMMENDED PROGRAM	**1986**	1509	48	112	1722	**1986**	34114	552	2416	37082
High Bound	**1990**	2048	74	128	2805	**1990**	46890	713	2600	50203
	2030	2651	114	188	3006	**2030**	60695	800	3500	64995
RECOMMENDED PROGRAM	**1986**	1509	48	112	1722	**1986**	34114	552	2416	37082
Low Bound	**1990**	1386	22	109	1546	**1990**	31183	433	2450	34066
	2030	2578	64	154	2849	**2030**	59024	750	3275	63049
ALTERNATIVE 1	**1986**	1909	68	129	2208	**1986**	43334	634	2761	46729
Current Outputs	**1990**	1933	68	129	2232	**1990**	44266	639	2783	47688
	2030	1825	68	129	2124	**2030**	41793	618	2694	45105
ALTERNATIVE 2	**1986**	2292	85	143	2623	**1986**	52487	714	3110	56311
High Market	**1990**	2675	179	195	3102	**1990**	61258	850	3510	65618
	2030	2841	203	253	3400	**2030**	65059	900	3900	69859
ALTERNATIVE 3	**1986**	2107	73	139	2421	**1986**	48250	685	2520	57455
High Nonmarket	**1990**	2369	108	161	2740	**1990**	54250	740	3320	58310
	2030	2369	115	252	2838	**2030**	54250	648	3520	58418
ALTERNATIVE 3A	**1986**	2104	73	139	2418	**1986**	48182	685	2520	51387
High Wilderness	**1990**	2364	108	161	2735	**1990**	54136	740	3320	58196
	2030	2366	115	252	2835	**2030**	54182	648	3520	58350
ALTERNATIVE 4	**1986**	2292	78	139	2616	**1986**	48250	685	3100	52035
High All Resources	**1990**	2691	147	172	3117	**1990**	54250	740	3320	58310
	2030	2675	159	254	3195	**2030**	61258	897	3462	65617
ALTERNATIVE 5	**1986**	1583	52	97	1831	**1986**	36751	520	2293	39064
Reduced	**1990**	1478	52	97	1726	**1990**	33846	520	2279	36645
	2030	1460	52	97	1708	**2030**	33434	520	2169	36123
ALTERNATIVE 6	**1986**	2232	80	155	2573	**1986**	51113	700	3110	54923
Implement Plans	**1990**	2573	157	215	3051	**1990**	58922	818	3262	63002
	2030	2568	203	310	3187	**2030**	58807	920	3510	63237
ALTERNATIVE 7	**1986**	2176	75	139	2493	**1986**	49830	685	3100	53615
High Present Net	**1990**	2462	119	201	2885	**1990**	56380	755	3200	60335
Value	**2030**	2414	131	276	2924	**2030**	55281	811	3460	59552
ALTERNATIVE 8	**1986**	2267	76	155	2605	**1986**	51914	685	3110	55709
1980 RPA	**1990**	2600	148	215	3100	**1990**	59540	748	3262	63550
	2030	2563	159	310	3139	**2030**	58693	897	3510	63100
ALTERNATIVE 9	**1986**	2311	89	157	2664	**1986**	52922	658	3110	56690
High Productivity	**1990**	2760	129	185	3181	**1990**	63204	780	3310	67294
	2030	3023	140	224	3494	**2030**	69227	794	3515	73536

SIGNIFICANT ENVIRONMENTAL EFFECTS

Chapter 4, Enviromental Consequences, discusses the environmental effects of each alternative in detail. Presented in this section, in a comparison format, is a summary of effects deemed most significant.

Economic Effects

The primary economic factors used to compare the RPA alternatives are present net value (PNV), annual benefits and costs, returns to the U.S. Treasury, returns to States, and consumers' benefit. These factors are described and discussed in appendix E: Analytical Processes.

Present net value (PNV) is the primary criterion used to measure the economic worth of the National Forest System program. For each alternative, PNV is the difference between the discounted value of all priced outputs and the discounted cost of all Forest Service management and investment over the analysis period. The priced outputs are those that are or can be exchanged in the market place, including recreation visitor days for wildlife, fishing, wilderness, and recreation experiences; animal unit months of forage; timber stumpage; commercial fish and fur animals; increased water flow; and minerals.

PNV converts all costs and benefits over the planning period to a common point in time. The PNV for each alternative can then be compared directly even though the costs and benefits occur at different times between alternatives.

The calculation of PNV requires an assumption about the discount rate. The primary discount rate used in this analysis is 4 percent, which approximates the long-term measure of the opportunity cost of capital (in real dollar terms) for the private sector of the U.S. economy. An analysis using a 10-percent rate showed that the relative PNV ranking of all RPA alternatives was not sensitive to a change in the discount rate from 4 to 10 percent.

Assumptions about the unit value of outputs are also important when calculating PNV. Some outputs, such as timber, generate actual returns to the Federal Treasury because they are sold in the market place. Other outputs, such as recreation, are provided without charge, but have a value to the users. All values used for the RPA evaluation are estimates of the market price for that output if it were sold in a competitive market. Actual market transactions are the basis for unit values for timber and minerals. For the other resources, special studies were conducted to estimate the market price as if the resources were actually sold. Analyses showed that the ranking of alternatives was not highly sensitive to value changes. For example, the relative ranking of RPA alternatives by PNV does not change when recreation values are reduced by as much as 50 percent. The development of resource values is described in appendix F.

The period of analysis in RPA is from 1986 to 2030. Some activities such as reforestation and road building may generate benefits beyond 2030, therefore some estimates of benefits may be conservative. However, for purposes of comparing alternatives, the difference in PNV would be small if benefits beyond 2030 were considered due to the long discounting period. Also, many investments prior to 1986 will generate benefits during the analysis period. To simplify this analytical problem, we have assumed a steady state situation where annual benefits and costs during the period of analysis are compared, and those occurring prior to 1986 and after 2030 are not included. All costs and benefits are reported in 1982 dollars.

Present net value is calculated under three different benefit assumptions: (1) PNV-total is calculated by assigning estimated market prices to all resource outputs from NFS land. Appendix F contains a complete tabulation of the values used in calculating PNV-total; (2) PNV-market assigns values to the resources that are more commonly bought and sold in the market place, i.e., timber, and minerals, commercial fish and pelts, and water; (3) PNV-receipts is calculated by counting only actual Treasury receipts (table 2.40) as benefits; it includes timber, minerals, range, and some recreation. Present value costs are the same for all three versions of PNV.

The Recommended Program has a high measure of economic efficiency because it: (1) is designed to respond to efforts to reduce costs and enhance benefits; (2) includes a plan to revitalize and maintain existing capital investments and thus avoids major rebuilding costs; and (3) provides for a smooth transition from current Forest Service management so that implementation does not require abrupt organizational changes. It also reflects an improvement in national equity since actual users would cover more of the cost of managing the resources.

Table 2.41 presents the results of the PNV analysis. Based on total benefits, PNV-total ranges from 106.8 billion dollars for Alternative 7 to 59.5 billion for Alternative 5. The High Bound has a relatively high PNV-total at 103.9 billion, exceeded only by Alternatives 3, 3A, and 7. The Low Bound PNV-total is $77.8 billion; only Alternatives 1 and 5 are lower.

Table 2.40--Returns to Treasury by Resource Area, Alternative, and Year

Alternative	Recommended Program Low Bound	Recommended Program High Bound	Alternatives 1	2	3	3A	4	5	6	7	8	9
			(Millions of 1982 Dollars)									
National												
1986												
Minerals	137	137	144	157	155	150	156	141	158	159	159	157
Range	13	13	18	19	18	18	18	16	18	18	19	19
Recreation	30	30	55	55	57	57	57	53	57	57	57	55
Timber	1132	1132	1132	1132	1132	1132	1132	1132	1132	1132	1132	1132
Total	1312	1312	1349	1363	1362	1357	1363	1342	1365	1366	1366	1363
1990												
Minerals	166	220	206	223	215	170	225	188	219	226	222	218
Range	13	13	18	20	18	18	19	15	19	18	19	20
Recreation	49	49	56	58	60	60	59	53	59	59	60	57
Timber	1472	1603	1606	1632	1504	1494	1714	1335	1667	1655	1689	1711
Total	1700	1885	1886	1933	1797	1742	2017	1591	1964	1958	1990	2006
2030												
Minerals	308	325	315	284	319	139	326	264	320	348	343	295
Range	14	19	18	24	17	17	20	13	20	18	20	22
Recreation	110	136	57	71	79	79	76	55	76	77	74	76
Timber	2496	2945	2820	2909	2809	2788	2925	2348	3153	3089	3157	2985
Total	2928	3425	3210	3288	3224	3023	3347	2680	3569	3532	3594	3378

Table 2.41--Economic Effects by Alternative and Year in 1982 Dollars

Effects		Recommended Program Low Bnd	Recommended Program High Bnd	Alternatives 1	2	3	3A	4	5	6	7	8	9
PNV Total (Billion $)	1986	77.8	103.9	67.6	88.0	105.3	106.0	98.7	59.5	95.0	106.8	94.7	100.6
PNV Market (Billion $)	1986	21.7	25.6	24.7	26.0	21.7	21.5	25.6	24.8	26.5	29.4	25.9	23.8
PNV Receipts (Billion $)	1986	3.6	4.8	8.4	-4.2	0.9	-2.5	-0.4	11.4	1.7	4.0	1.2	-5.0
Total NFS Appropriated Cost (Million $)	1986	1352	1352	1719	2015	1855	1852	2016	1376	1966	1908	1987	2035
	1990	1211	1827	1740	2277	2024	2019	2307	1284	2203	2095	2208	2357
	2030	2282	2420	1657	2536	2162	2160	2409	1260	2323	2177	2324	2694
Total NFS Benefits (Million $)	1986	3716	3716	4104	4242	4363	4378	4476	3541	4346	4486	4376	4495
	1990	4140	4923	4207	4912	5086	5104	5273	3556	4888	5247	4862	5302
	2030	8605	10924	6613	10087	11794	11841	11089	5316	11012	11692	10765	11930
Returns to the Treasury (Million $)	1986	1312	1312	1408	1422	1421	1416	1422	1401	1424	1425	1426	1422
	1990	1700	1885	1886	1933	1797	1742	2017	1591	1963	1958	1990	2006
	2030	2928	3425	3210	3288	3224	3023	3347	2680	3569	3532	3594	3378
Returns to States (Million $)	1986	294	294	316	316	316	316	316	315	316	316	316	316
	1990	408	416	420	427	395	393	448	351	436	433	442	447
	2030	655	775	724	751	726	721	755	604	812	796	813	771
Consumers' Benefit (Million $)	1986	2404	2404	2697	2820	2943	2962	3054	2141	2922	3061	2952	3074
	1990	2440	3038	2321	2980	3289	3362	3256	1965	2925	3289	2872	3296
	2030	5677	7499	3403	6799	8570	8817	7742	2637	7443	8160	7171	8552

The ranking of alternatives changes somewhat when only market values are used in calculating PNV. The High Bound ranks fifth based on PNV market at 25.6 billion while the Low Bound ranks tenth. Alternative 7 maintains its highest ranking, but Alternative 3A which emphasizes nonmarket outputs drops to last. The Low Bound is only slightly higher. In contrast, Alternative 2, which emphasizes market outputs, moves from sixth rank to third.

Based on Treasury receipts, Alternatives 5 and 1 generate the highest PNV. Alternative 4 is about even, i.e., present value benefits nearly equal present value costs. The High Bound ranks third while the Low Bound ranks fifth based on PNV-receipts. In present value dollars, the direct receipts to the Treasury will be $39.3 billion from timber, $7.1 billion from minerals, $1.8 billion from recreation, and $.4 billion from range at the High Bound. The present value of the direct receipts to the Treasury at the Low Bound will be $34.1 billion from timber, $6.4 billion from minerals, $1.5 billion from recreation, and $.3 billion from range.

Alternative 9 has the lowest PNV-receipts of all alternatives at -5.0 billion dollars, even though unit costs for timber are generally lowest for this alternative. This occurs primarily because the high timber volume depresses timber prices, and because outputs have gone beyond the point where PNV is maximized.

Annual costs and annual total benefits are presented in table 2.41. These annual benefits were developed by valuing all outputs as shown in appendix F. In all alternatives total benefits exceed costs for all years. Also, in all alternatives, total benefits increase at a faster rate than costs over time. By 2030, the High Bound benefits will exceed costs by about 350 percent, and Low Bound benefits will exceed costs by 275 percent. Only Alternatives 1 and 5 are lower than High Bound costs in 1990, and only Alternatives 2 and 9 costs are higher in 2030. The Low Bound has lower costs than all Alternatives in 1990, but exceeds Alternatives 1, 3, 3A, 5, and 7 by 2030.

Returns to Treasury (receipts) are also provided for comparison in table 2.41. On an annual basis, receipts are about equal to costs at the High Bound until about 2000. After that, receipts rise well above costs as outputs continue to grow while costs rise much more slowly. In the early years at the Low Bound, receipts exceed costs largely because of cost reductions which reduce the asset base. Receipts also exceed costs through the latter part of the planning period at the Low Bound. The net effect of these relationships is a higher PNV-receipts at the High Bound. By 2030, receipts exceed costs by 42 percent at the High Bound, while receipts exceed costs by 28 percent at the Low Bound. Alternatives 4 and 9 will generally provide the highest treasury receipts in 2000 with Alternative 5 returning the lowest amount. 2030 receipts would be highest in Alternatives 6, 8, and 7 and lowest in Alternatives 5 and 1. The returns to the Treasury are also heavily dependent on projected real stumpage price increases, i.e., stumpage prices that are projected to rise faster then inflation due to the increased demand for wood products. Direct receipts to the Treasury are obtained from timber, minerals, recreation, and range resource uses. Receipts for timber will range from $1.1 billion in 1986 for the Recommended Program to nearly $3.0 billion at the High Bound by 2030 and $2.5 billion at the Low Bound. Mineral receipts will more than double during the same period, recreation receipts will increase more than 400 percent, and range will increase only moderately (table 2.40).

Treasury receipts are not a good estimate of the total value of the National Forests to society, since only those outputs that are actually sold are included on the benefit side of the equation. Other benefits are not included in the calculations. Except for Alternatives 1 and 5, the total benefits in the economic efficiency calculations are about one-third direct receipts to the Treasury (one quarter of which are returned to the States) and two-thirds consumers' benefit. Consumers' benefit, the difference between total benefits and returns to Treasury, is the difference between estimated market price and the actual fee that is being collected for the output. It represents the total benefits received by users which are in excess of the fees paid by those users. Consumers' benefit is one measure of subsidy to users of NFS lands. The range of consumers' benefit in 1986 is from $2.1 billion dollars in Alternative 5 to about $3 billion in Alternatives 3A, 4, 7, and 9. In 2030, the range is from 2.6 billion dollars in Alternative 5 to 8.8 billion in Alternative 3A. The Recommended Program will provide $7.5 billion in consumers' benefits at the High Bound in 2030 and $5.7 billion at the Low Bound. In 2030, Alternatives 9, 3, 4, and 7 are highest with regard to consumers' benefit.

The Act of October 20, 1976, commonly referred to as the Payments in Lieu of Taxes Act (P.L. 94-565), provides for annual payments to certain units of local government. Local governments receiving those payments are those in which entitlement lands are located. Entitlement lands include National Forest System lands, National Parks and Monuments, and lands administered by the Secretary of the Interior through the Bureau of Land Management. Historically, approximately 25 percent of the National Forest receipts have been paid to State and local county governments. These payments are part of the total National Forest Fund. As with the returns to the U.S. Treasury, alternatives which produce market out-

puts show higher returns to the States. Alternative 6 would provide the largest returns to States by 2030 - about 824 million dollars. Returns to States at the High Bound contribute 775 million dollars by 2030 to State and local governments, and at the Low Bound, 655 million. By contrast, Alternative 5 would return only 604 million by 2030.

Though legal standards will be met, adverse economic and social effects would be expected to occur in Alternative 5 in rural areas dependent upon National Forest resource outputs and Forest Service activities. Alternative 5 results in a significant drop in resource-based industry employment and income, especially in Regions 1 and 3. Manufacturing and services sectors exhibit modest growth. Local communities moderately to heavily dependent on National Forest-related outputs and activities would be adversely affected. Alternatives 2 and 9 will result in major increases in service, manufacturing, and resource-based income and employment, particularly in Regions 5, 6, and 10. Western Regions, including Alaska, will likely experience population growth in some local communities where economic expansion is concentrated. Alternatives 6, 7, and 8 rank relatively high in employment and income, particularly in Regions 2, 3, and 4. Generally, the effects are similar to Alternatives 2 and 9. The remaining alternatives show slight to modest employment and income effects (see appendix K for more detail).

Social Effects

With its sharply curtailed budget, Alternative 5 carries with it both reduced marketing of resources and less funding. This could mean fewer jobs and narrowed options for use of the National Forest resources. Reduced employment, lower market outputs, and declining revenues to local governments would adversely affect local communities, encouraging emigration and placing a greater burden on public social service. Effectiveness of equal opportunity programs designed to place minorities and women in new or vacated positions will be reduced.

The Recommended Program along with Alternatives 2, 3, 4, 6, 7, 8, and 9 represent increasing activities, through different mixes of resource management emphasis. Social effects will be similar in magnitude, but differ according to management emphasis. For example, persons whose livelihoods or lifestyles depend on extracting or processing National Forest resources will be adversely affected in Alternative 3 and positively affected in the other alternatives. Persons or groups who place a high value on the maintenance and use of nonmarket resources such as wildlife, wilderness, and outdoor recreation will be positively affected by Alternative 3 and most negatively affected by Alternatives 2 and 5.

Alternatives 2 and 9 lead to the largest increase in employment opportunities in market-oriented industries; e.g., timber, mining, and grazing. The results will be: immigration of people to many local communities; expanded economic base; increased local revenues, income, and employment; improved community stability; and increased opportunities for hiring women and minorities. This alternative will increase local concerns that rural values and traditions will be lost or weakened when outside interests expand their operations and additional people enter the area. Some communities may have difficulty providing for very rapid local growth if planning is insufficient.

Biological Effects

Wildlife and Fish

Table 2.42 indicates the relative change in wildlife habitat carrying capacity between 1985 and 2000 for each alternative by Region. The species listed are representative of the varying habitats and are management indicator species. This table is displayed as an index with 1985 equaling 100. The figures displayed are a comparison of relative change expected by the year 2000. For example, a figure of 95 indicates a slight downward trend in carrying capacity, while a figure of 110 represents increased capacity.

In Alternatives 2 and 9, fish and wildlife habitats are adversely affected except for those wildlife species dependent on early successional vegetation. Nonanadromous fish habitat in Regions 3, 5, 6, 8, and 9 would experience the most significant adverse effects in these two alternatives, while anadromous fish habitat will be significantly impacted in all Regions except Alaska (Region 10). In Alternative 5, wildlife species dependent on early successional vegetation activities such as timber harvest will be adversely affected. Other wildlife species dependent on reduced activity or old growth timber will be favored. The habitat of major big game species would suffer least in Regions 2 and 10. Fisheries habitat would be adversely affected in Regions 1, 3, 4, 5, 9, and 10. Management objectives for most of the endangered, threatened, and sensitive species would not be achieved, although legal requirements would be met.

Both Bounds of the Recommended Program have a positive effect on habitat carrying capacity for most of the species that are hunted and fished. All indices below 100 at the Low Bound will reach 100 after 2000.

Table 2.42--Index of Habitat Carrying Capacity for Species Hunted and Fished, 2000 [1/]

	Region	Recommended Program		Alternatives									
		Low Bound	High Bound	1	2	3	3A	4	5	6	7	8	9
Mule Deer	1	97	103	95	95	110	105	105	95	110	110	105	90
	2	100	105	95	95	110	105	105	95	110	110	110	90
	3	105	120	95	70	130	110	110	90	120	120	120	70
	4	97	106	95	90	120	110	100	95	110	105	105	90
	5	97	102	95	85	105	100	95	95	105	105	105	80
	6	95	100	95	95	105	100	105	95	105	105	110	90
Elk	1	102	109	95	90	115	110	105	90	110	90	110	85
	2	97	102	95	95	105	100	105	95	105	105	105	90
	3	100	115	95	80	115	110	105	85	110	110	110	80
	4	94	108	95	90	120	110	95	90	110	105	110	85
	6	95	100	95	85	90	90	85	95	95	85	85	80
White-tailed Deer	1	95	105	95	95	105	100	105	90	110	100	105	95
	2	105	110	100	100	115	110	105	95	110	105	105	95
	3	100	120	100	95	120	110	110	90	115	115	115	95
	6	100	105	95	95	105	105	105	95	105	105	105	90
	8	95	110	95	110	105	90	115	85	120	120	120	110
	9	85	100	95	110	115	90	120	90	110	115	115	110
Black-tailed Deer	5	100	105	95	90	105	100	100	95	105	105	105	85
	6	95	100	95	105	80	80	110	80	115	115	115	100
Wild Turkey	3	95	105	90	60	105	100	100	90	100	100	100	60
	8	90	80	100	70	105	100	90	95	90	90	90	60
	9	90	95	95	80	125	120	90	90	95	115	115	50
Resident Trout	1	95	108	95	90	110	110	105	90	95	95	105	90
	2	97	102	95	95	110	110	105	95	100	105	105	95
	3	95	110	90	70	115	120	100	90	110	110	110	70
	4	90	105	95	90	110	110	100	90	105	105	100	90
	5	103	107	95	85	110	110	90	85	105	105	105	75
	6	95	100	95	80	110	115	90	95	100	100	95	35
	8	90	90	95	85	110	105	95	100	90	90	90	60
	9	80	100	90	90	115	115	100	80	95	105	100	60
Anadromous Fish	1	95	105	85	75	95	100	95	85	100	75	95	65
	4	90	110	90	85	120	110	95	90	110	105	110	85
	5	100	115	90	90	110	115	100	80	110	110	110	85
	6	95	100	90	80	115	115	95	95	115	100	100	35
	9	80	100	90	90	115	115	100	80	95	100	100	60
	10	100	105	95	115	105	105	115	90	115	115	115	105
Warm-water Fish	2	100	100	100	95	110	110	105	95	105	105	105	100
	3	100	115	100	90	115	115	110	90	110	110	110	90
	5	100	102	100	100	105	100	100	100	105	105	105	100
	8	100	105	100	95	110	100	105	95	105	105	105	95
	9	85	100	95	90	115	105	100	85	100	105	100	85

1/Numbers shown are index numbers for 2000 with 1985 = 100.

Table 2.43 displays the anticipated changes in habitat capability for species with special habitat needs. The special habitat types are: mature/over-mature forest, riparian, sagebrush, grassland, and standing dead trees. The indices in this table represent the anticipated change in habitat capability by the year 2000 assuming 1985 represents 100. The table is based on the same principles as table 2.42.

Most alternatives show adverse effects on wildlife species which require mature or overmature forest conditions and standing dead trees. However, sufficient habitat will be provided in all alternatives to maintain viable populations of vertebrate species.

Table 2.43--Index of Habitat Capability for Species with Special Habitat Needs in 2000 [1]

		Recommended Program		ALTERNATIVES									
Special Habitat	Management Indicator Species	Low Bound	High Bound	1	2	3	3A	4	5	6	7	8	9
Mature/ Over-Mature Forest Conditions	Pileated Woodpecker	95	85	85	65	80	80	70	95	75	75	75	60
	Spotted Owl	60	45	60	35	55	70	40	70	45	45	45	25
	Goshawk	100	110	100	85	110	110	90	100	95	95	95	80
	Pine Marten	90	85	95	80	100	100	90	100	85	85	85	70
	Sitka Black-tailed Deer	100	100	95	90	100	100	100	95	100	95	95	85
Riparian Habitats	Otter	105	110	100	90	115	110	110	100	110	105	105	85
	Black Hawk	110	110	100	95	115	110	110	100	110	105	105	90
	Osprey	85	95	100	90	120	115	115	95	115	110	110	85
Sagebrush	Brewer's Sparrow	100	100	100	90	100	110	95	110	95	95	95	85
Grasslands	Chestnut Collared Longspur	100	100	100	90	110	110	105	95	105	100	100	90
	Meadowlark	105	105	100	95	110	110	105	95	105	100	100	95
Standing Dead Trees & Cavities	Hairy Woodpecker	100	100	85	75	100	100	80	95	80	80	80	70

[1] These indexes are National level comparisons of habitat capability estimated to exist under each alternative in the year 2000 as compared with habitat capability existing in 1985 (1985 = 100). In some Regions habitat capability may remain stable or decline, but as a result of significant increases in other Regions the trend would be expected to increase. It is also important to recognize that although the trend is expected to decline for certain species, habitat would be provided in all alternatives to maintain at least viable populations of all vertebrate species.

Table 2.44 indicates how well each alternative meets the schedule of the Forest Service share of management and recovery objectives established in cooperation with the States and U.S. Fish and Wildlife Service. The Recommended Program meets or exceeds objectives at the High Bound by 2000. Objectives will be met for all species after 2000 at the Low Bound. Many of the effects of the alternatives are not significant at the national level, but may be at the Regional/local levels. Although management objectives for most of the endangered, threatened, and sensitive species are not met in Alternatives 1, 2, 5, and 9 by the year 2000, the objectives will eventually be met in all alternatives.

Table 2.44--Effects of RPA Alternatives on Selected Endangered, Threatened, and Sensitive Species Objectives

Species	Unit of Measure	Current Level (1986)	FS Mgmt and Recovery Objectives (2000) [1]	Recommended Program		RPA Alternatives [2]									
				Low Bound	High Bound	1	2	3	3A	4	5	6	7	8	9
Woodland Caribou	No. of Animals	26	55	+	+	0	0	+	+	+	+	+	+	+	0
Grizzly Bear	a.No. of mortalities* b.Ac. Under Guidelines**	a. 11.8 b. 7,441,300	a. 0*** b. 7,441,300	+	++	0	0	++	+	+	0	++	+	++	0
Bald Eagle	Number of Breeding Pairs	487	730	+	+	+	0	++	+	+	0	+	+	+	0
Peregrine Falcon	Number of Breeding Pairs	59	206	+	++	0	0	++	++	+	0	+	+	+	0
Red-Cockaded Woodpecker	No. of Colonies	2,000+	to be established	0	+	+	0	++	0	+	0	+	0	+	0
Oregon Silverspot Butterfly	Acres of Occupied Habitat	920	1,330	+	+	0	0	+	+	+	0	+	+	+	0
Cheat Mt. Salamander	No. of Populations	18	22	0	+	0	+	++	++	++	0	+	+	++	0
Kirtland's Warbler	No. of Breeding Pairs	37	400	0	+	0	+	++	++	+	0	+	+	+	0
Robbin's Cinquefoil	Acres of Occupied Habitat	42	42	0	+	0	0	+	+	+	0	+	+	+	0
Mississippi Sandhill Crane	No. of Populations	0	1	+	+	+	0	+	+	+	+	+	0	+	0
Lahontan Cutthroat Trout	No. of Populations	35	48	+	++	0	0	+	++	+	0	+	+	+	0
Gila Trout	No. of Populations	9	30	+	+	0	0	++	++	+	0	++	+	+	0
Arizona Trout	No. of Populations	8	18	+	+	+	+	++	++	+	+	+	+	+	+
Modoc Sucker	No. of Populations	5	8	+	+	0	0	++	++	+	0	+	+	+	0
Puerto Rican Parrot	No. of Pairs	5	100	0	+	+	0	++	+	++	0	++	0	++	0

1 Objectives are established in cooperation with the States and U.S. Fish and Wildlife Service. Objectives will be revised as better information becomes available and recovery plans are developed or amended.

* 5 Year average of illegal mortality.
** Acres managed under situation 1 & 2, per Grizzly Bear Recovery Plan.
*** Preventable human caused illegal mortalities.

2 ++ = Exceeds management objectives/recovery schedule.
+ = Meets management objectives/recovery schedule.
0 = Does not meet management objectives/recovery schedule.

Note: Although the management objectives/recovery schedule may not be met by the year 2000 in certain alternatives, the objectives will be met eventually in all alternatives.

Physical Effects

Long-term soil productivity and water quality.--Regional data for each alternative were summarized and used to generate National acreage figures for soil disturbance (appendix K). Comparisons with the 1986 level are presented in table 2.45 for the year 2000. This table displays soil management activities, both beneficial and potentially adverse by alternative. Since neither soil productivity nor water quality would be allowed to fall below legal or management alternative, this table is provided as a relative measure by which to compare alternatives. Alternative 5 is the only alternative that will result in national long-term soil productivity and water quality effects falling below the current level. The cause of this decline is reduced emphasis on those activities that have beneficial effects on long-term soil productivity and water quality; such as watershed condition improvement, nonstructural range improvement, and nonstructural wildlife habitat improvement projects. Although it is below the current level, Alternative 5 will meet legal requirements and minimum management standards for soil productivity and water quality.

The other alternatives all have a general upward trend, nationally. Regions 1, 3, 4, and 5 have trends similar to the national trends shown in table 2.45. Generally, Regions 2, 6, 9, and 10 change little from the trends established for the base year in the national table; Region 8, however, has a declining trend over time (appendix K).

Visual condition class.--The national summary of changes anticipated in visual condition class between 1986 and 2000 by alternative are shown in figure 2.23. The effects within any individual Region may be above or below the trend indicated by the national summary. To review the Region-by-Region trends, see appendix K. Visual conditions are most affected in Alternatives 2, 4, 6, 7, and 8. The major changes occur mostly in Regions 5 and 6. The most significant effects will occur in localized areas.

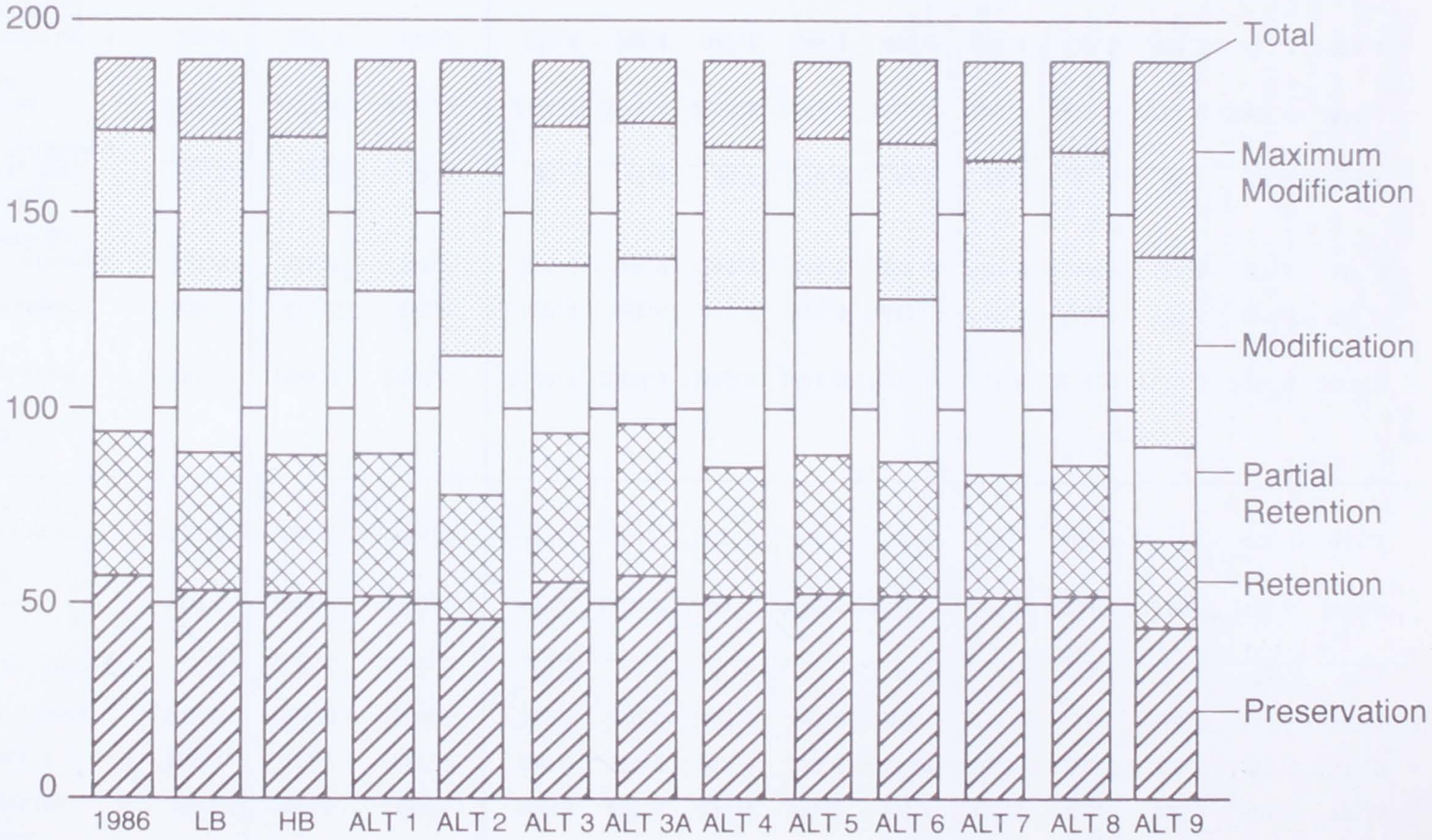
Table 2.45--Area Involved in Soil Disturbing Management Activities for Year 2000

Activities	1986	Recommended Program Low Bound	Recommended Program High Bound	Alternatives 1	2	3	3A	4	5	6	7	8	9
				(Thousand Acres)									
Beneficial													
Reforestation	369.2	442.5	453.3	380.3	651.0	393.4	391.7	585.6	257.9	505.7	486.9	510.8	780.1
Range Improv.	101.9	235.7	261.5	220.0	359.8	213.5	213.5	367.2	101.5	276.0	256.5	346.8	347.9
Wildlife Improv.	271.8	519.9	608.6	332.7	470.8	667.3	667.0	620.2	213.1	553.0	564.2	554.7	513.6
Watershed Improv.	7.6	30.6	32.7	16.0	39.2	47.3	47.3	48.7	7.9	45.7	30.7	46.3	43.1
Total Area Involved	750.5	1228.7	1355.9	949.0	1520.8	1321.5	1319.5	1621.7	580.4	1380.4	1338.3	1458.6	1684.7
Total Acres of Soil Disturbed [1]	213.9	393.0	436.8	301.9	490.5	432.9	432.5	535.5	174.2	450.7	425.7	488.3	527.2
Potentially Adverse													
Timber Harvest	1665.0	1936.4	2048.5	1539.5	2580.3	1649.1	1641.0	2305.0	1116.6	2074.0	2016.8	2046.6	2879.2
Fuel Treatment	306.7	453.5	463.4	429.4	691.6	432.4	429.9	649.6	305.9	555.4	564.5	569.2	793.0
Minerals (Energy and Nonenergy)	131.0	155.4	151.5	138.6	156.9	144.8	144.8	152.6	107.9	149.2	157.4	152.6	157.8
Roads (Local, Arterial, and Timber Purchaser)	25.5	32.5	32.5	26.7	45.6	30.5	30.5	43.0	18.3	37.3	36.2	37.2	44.1
Total Area Involved	2058.8	2577.8	2695.9	2134.2	3474.4	2256.8	2246.2	3150.2	1548.7	2815.9	2774.9	2805.6	3874.1
Total Acres of Soil Disturbed [1]	320.9	387.9	397.2	327.6	490.4	347.2	346.1	453.0	241.4	412.1	412.3	413.3	529.7

[1] Acres of soil disturbed were determined by multiplying area involved by weighting factors found in Chapter 4.

Figure 2.23

Visual Condition Classes by Alternatives at Year 2000 (NFS)



HB = High Bound of the Recommended Program
LB = Low Bound of the Recommended Program
1986 = Base year for comparison

Chapter 3:

Affected Environment

This chapter describes the environment affected by the RPA Program. The descriptions are based upon the information contained in the 1979 Assessment and the 1984 Supplement to it. The affected environment is examined by opportunity areas--water, minerals, range, recreation, wilderness, timber, fish and wildlife, international forestry, and protection and support activities such as fire protection, insect and disease control, maintenance of air quality, and management of lands and soils. Economic and social factors are also examined. Thus, resource areas, support activities, and economic and social factors are seen as mutual major components of the affected environment.

The consequences expected from implementation of the Program are described in Chapter 4.

THE LAND AND WATER BASE

About 66 percent--1.6 billion acres--of the total area of this Nation is classified as forestland, rangeland, or water. (Figure 3.1). The National Forests and Grasslands comprise 191 million acres located in all but eight States. About 94 percent--179.5 million acres--is forestland, rangeland, or water. The remaining 6 percent is primarily rock and ice.

Forestland

About 721 million acres are classified as forestland (land that is 10 percent stocked with trees). Two-thirds of this area--481 million acres--is commercial forest land (see glossary). Nonindustrial private owners own 278 million acres of the commercial forest land. Another 69 million acres are owned by forest industries; the remainder is in public ownership. The National Forests contain 87 million acres of lands classified as commercial forest lands, about 18 percent of the national total.

Rangeland

A little less than half of the 1.6 billion acres--770 million acres--is classified as rangeland (land on which the natural vegetation is predominantly grasses, grass-like plants, and forbs or shrubs suitable for grazing or browsing). It includes natural grasslands, coastal marshes, wet meadows, savannas, most deserts, shrublands, tundra and alpine plant communities, and introduced plant communities managed like rangelands. About 57 percent of rangeland is privately owned and Federal lands make up most of the balance. The National Forests and Grasslands contain 41 million acres of rangeland, about 5 percent of the national total.

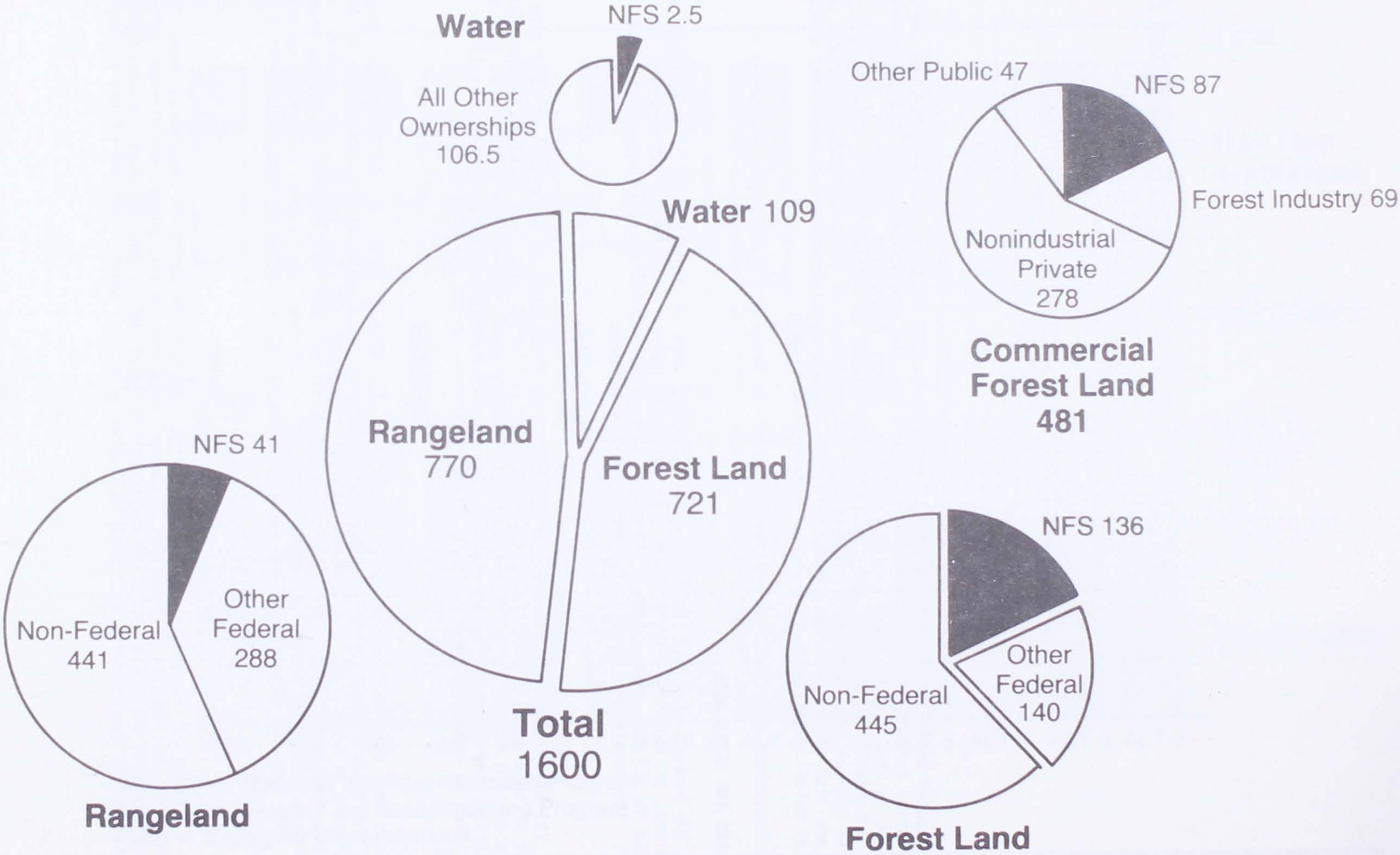
Water

About 5 percent of the area of the United States--109 million acres--is covered by water. A little more than half of this area is in lakes (exclusive of the Great Lakes), ponds, and streams. The remainder is contained within the Great Lakes and inland coastal area waters such as bays, sounds, and straits. The National Forest System contains 2.5 million acres of water, about 2 percent of the Nation's water acreage.

Figure 3.1

Ownership of Forest Land, Rangeland, and Water Areas of the United States

Millions of acres



Water

Forestlands produce about 65 percent of the Nation's total streamflow. On the average, forestlands yield about 17 inches of runoff because of their location in areas of higher precipitation, compared to four inches from other lands. In addition to being sources of surface water, forests are important recharge areas for ground water systems, including aquifers. Water, as one of the renewable resources, is also extremely valuable for its hydropower potential. Table 3.1 illustrates Regional water yield and storage from National Forest lands.

Table 3.1--Water Yield and Storage Capacity of National Forest Lands

NFS Region	Water Yield[1] (Million AF)	Total Number of Dams[2]	Total Maximum Storage[2] (Thousand AF)	Rivers and Streams[3] (Acres)	Reservoirs, Impoundments[3] (Acres)	Lakes and Ponds[3] (Acres)
1	39.2	1,611	11,216	46,224	99,018	40,492
2	18.7	2,768	1,252	24,943	41,674	24,565
3	2.9	170	2,328	14,865	30,290	3,017
4	27.2	826	7,295	41,278	89,401	64,258
5	37.6	1,222	33,625	160,781	120,719	26,629
6	74.0	196	5,281	59,490	64,602	78,575
8	29.2	472	4,821	52,307	157,288	23,109
9	19.6	368	2,225	29,522	30,641	370,682
10	284.0	42	348	28,781	1,280	170,805
TOTAL	530.4	7,675	68,391	458,191	634,912	802,132

AF = acre-feet

[1]1982 Regional Data Base

[2]Forest Service Dam Inventory

[3]Waters suitable for enjoyment of water-related recreation activities including fishing, boating and swimming; 1982 Recreation Inventory Management System Acreage Summary

The 770 million acres classified as rangeland are also important watersheds. Although these lands receive less precipitation than forests, and contribute less runoff, they include vegetative types that lend themselves to water resource improvement activities.

Prolonged seasonal shortages of water occur in the East, in southern Florida, and in the Midwest, particularly in the Chicago area. In many areas of the Plains States, the Southwest, major drainages of the Rocky Mountains, and arid areas of the Pacific Northwest, the supply of water is often critically inadequate. In most water-short areas, a change to dryland farming and range grazing would occur as water uses shift to higher value municipal and industrial purposes. As a result, agricultural employment and income would decline. The loss of employment in agriculture may be offset in some areas by mining and industrial development but economic and social costs associated with job and capital loss and human migration could be high.

Minerals

The Forest Service plays a key role in facilitating exploration and development of mineral resources on NFS lands. Although some domestic mineral resources are limited, there are geologic indications that others occur in abundance. The U.S. has the resources to supply an increasing amount of its overall energy and mineral needs for many years.

Consumption of mineral resources has been rising, with substantial growth expected for all except oil and gas. For example, the demand for domestic coal is projected to rise nearly tenfold by 2030. The demand for domestic uranium shows even more rapid growth. The greatest increases in demands for both coal and uranium occur after 2010 and reflect the shift associated with the growing scarcity of crude oil and natural gas in the U.S. and other producing countries in the world. The increase in demands for the metals and nonmetals that are likely to impact forest and range lands is much smaller than that for coal, and roughly comparable to the projected growth in economic activity.

Lands managed by the Forest Service are believed to contain considerable mineral resources. Fifty billion tons of coal underlie approximately 6.5 million acres. This coal resource can satisify all U.S. domestic needs for over 70 years based on 1980 domestic coal consumption levels. About 45 million acres, particularly in the Western and Eastern Overthrust Belts, have potential for oil and gas. Some 300,000 acres have shale-oil potential. Idaho has significant cobalt deposits. Other areas contain geothermal energy sources, copper, molybdenum, uranium, cobalt, chromium, platinum-group metals, barium, and lead; there is also potential for extraction of fluorine, tin, nickel, gold, tungsten, and antimony.

Energy and other minerals development has caused major economic and social impacts in rural areas. Rapid economic growth and population influx have often overwhelmed community resources. Planning for orderly development by providing adequate community infrastructure and meeting social services, fire, police and educational needs is often difficult or impossible in the short term. Beyond this initial economic imbalance, energy and minerals development provides for growth in the retail sales and service sectors as local tax revenues come on line. The dominance of minerals development in an area can also restrict other forms of economic development, and result in more cyclical growth as changing market conditions influence the demand for minerals.

Range

Thirty-two percent of the United States--770 million areas--is classified as rangeland. Of this, about 5 percent is within National Forest System lands. A little over three quarters of the Nation's rangeland lies within the 48 contiguous States. In addition, about 600 million acres of forestland within the contiguous states is generally suitable for grazing. Over half of the rangelands are in private ownership, located mainly in the Great Plains and Rocky Mountains. Table 3.2 displays grazing use by Forest Service Region for 1982. It also displays the status of allotment management.

In the past, red-meat consumption per capita increased with rising disposable incomes. Projections show that per-capita annual consumption of red meat will rise from 135 pounds in 1976 to 148 pounds in 2030. In addition, there could be a significant export market for red meat. On the basis of such projections, the demand on all ownerships for range forage for livestock is expected to rise about 40 percent.

More than half of the range area in all ownerships--most of which is in the shrublands in the Southwest --is producing at less than its potential. This area has an arid climate, prolonged grazing seasons, and a 400-year history of grazing by livestock. The grasslands in the Plains States are in only slightly better condition than the shrublands. On the other hand, high elevation rangelands--mountain grasslands --are in the best condition.

If the current supply continues unchanged and the projections of demand are realized, growing unavailability and rising prices of range forage will result. The most extensive range grazing opportunities are on private lands. Federal lands produce 13 percent of the total livestock animal unit months of grazing use. Grazing on Federal land is commonly seasonal and integrated with private lands to provide year-long forage for economically viable grazing operations. Federal lands, therefore, play a supplementary role in local economies based on ranching. National Forest lands contain only about 20 percent of the Federal rangelands, and use meets about 5 percent of the current national demand.

Table 3.2--Range Allotment Management, Acres Grazed, and Active Use on National Forest Lands

NFS Region	NUMBER OF ALLOTMENTS: Total	Improved Management Started	Improved Management Maintained	Suitable[1] Acres Grazed (Mil. Acres)	Actual Use (Mil. AUMs)
1	2,154	33	1,257	4.00	1.40
2	2,703	195	1,980	8.40	2.17
3	1,519	130	882	14.50	2.40
4	2,220	82	1,172	11.00	2.30
5	829	69	578	4.70	0.53
6	827	67	450	6.90	0.75
8	644	56	449	2.20	0.23
9	173	73	118	0.05	0.07
TOTAL	11,069	705	6,886	51.75	9.85

AUMs = Animal-unit-months
[1]Land that produced forage or has inherent forage-producing capacities and can be grazed by livestock.
Source: 1982 Annual Grazing Statistical Report

Recreation

The 1.6 billion acres of forest, rangeland, and associated water in the United States have the capability to meet the projected increases in demand for nearly all outdoor recreational experiences. However, the supply of lands to provide primitive and semiprimitive recreational experiences is rapidly declining in many areas. Forty-seven percent of the total forest and range land is in private ownership, and over 90 percent of the Federal acreage is in the western United States, including Alaska. In total, these lands are rich in diversity of topography, vegetation, and climate. But there are shortages of some types of water-based opportunities and highly specialized recreation sites for activities such as downhill skiing. The 1982 outdoor recreation activities on National Forests are displayed by Region in table 3.3.

Rising participation in outdoor recreational activities has been related to increases in population, per-capita income, technological advances, and leisure time. The relatively low cost of recreation on public lands is another factor contributing to increase in use. Past trends in participation are expected to continue. Snow and ice activities would likely exhibit the largest increases--140 percent by 2030. Participation in water-related activities is projected to increase 106 percent by 2030. Camping would also increase rapidly, as would the use of wilderness.

As participation in outdoor recreation increases, the attendant recreation service industries would play a larger role in local economies. With opportunities for expansion of recreation on private lands in the East, recreation would help provide the impetus for service-based employment and income growth in nonmetropolitan areas undergoing the transition from agriculture. In the West, the growth in recreation activities on public lands results in more geographically dispersed and more varied economic impacts. Recreation would maintain its strong influence on services and real estate (second homes) growth, especially around ski areas. The seasonal recreation activities would have minimal economic effects and may be overshadowed by the growth from energy development in some areas.

Table 3.3--Outdoor Recreation Activities on National Forest Lands by NFS Region, 1982 (Thousands of Recreation Visitor Days)

	FOREST SERVICE REGIONS									
Activity	1	2	3	4	5	6	8	9	10	Total
Camping and Picnicking	3,104	6,800	7,286	9,557	15,393	9,968	7,911	5,787	359	66,165
Mechanized Travel	3,374	8,837	7,973	6,878	16,522	8,769	7,398	6,121	1,527	67,399
Fishing, Hunting and Nature Study[1]	2,346	3,676	2,457	4,123	4,277	4,524	7,065	4,881	819	34,1
Hiking and Horseback Riding	1,238	2,387	1,464	2,062	3,153	2,386	2,092	1,398	220	16,400
Winter Sports	664	4,002	683	1,648	3,736	2,077	23	1,158	178	14,169
Water-Related Activity	351	234	1,120	595	2,807	1,029	1,991	1,420	94	9,641
Resort, Cabin and Organizational Camping	581	1,396	1,117	1,907	6,301	2,279	471	687	155	14,894
Other	964	880	1,533	1,349	1,896	1,847	1,095	705	215	10,484
TOTAL	12,622	28,212	23,633	28,119	54,085	32,879	28,046	22,157	3,567	233,320

[1]Includes total wildlife use reported in all opportunity areas.
Source: Recreation Inventory Management System

Wilderness

The National Wilderness Preservation System consists of 468 areas totaling about 88 million acres. The Forest Service administers 327 units totaling 32 million acres (table 3.4). Public lands administered by the National Park Service, Fish and Wildlife Service, and the Forest Service have been the principal sources of wilderness. The Bureau of Land Management, another potential major source of additional wilderness acreage, is currently studying roadless and undeveloped lands under its administration for wilderness consideration.

Table 3.4--Wilderness Acreage and Recreation Use on National Forest System Wilderness, by NFS Region, 1984

	FOREST SERVICE REGIONS									
	1	2	3	4	5	6	8	9	10	Total
Classified Wilderness Acres (Million Acres)	5.0	4.2	2.7	4.5	3.9	4.6	0.5	1.2	5.5	32.1
Recreation Use (Thousand RVDs)	1,221	2,023	787	1,116	2,188	1,449	386	1,500	488	11,158

RVDs = Recreation Visitor Days

Source: Recreation Inventory Management System

Timber

The Nation has a large commercial forestland base--481 million acres from which comes about nine-tenths of the annual timber harvests. These forestlands contain some 792 billion cubic feet of roundwood. Nearly two-thirds of the total volume is in sawtimber trees, another quarter is in poletimber trees, and the remaining 10 percent of all roundwood volume is in rough, rotten, and salvable dead trees. Some of this latter material may be suitable for lumber and veneer, but most of it is usable only for pulp, fuel and other products where log quality requirements are flexible.

Softwoods predominate in the Nation's timber inventory. There is a total of 456 billion cubic feet of softwood growing stock inventories, including 1,985 billion board feet of sawtimber. Twenty-seven percent of the softwood growing stock (22 percent of the sawtimber inventory) is in nonindustrial private ownerships, largely those in the East. Sixteen percent is in forest industry ownership; over half of this is in the West. The largest portion of the softwood timber inventory, some 46 percent of all softwood growing stock and 51 percent of the sawtimber, is on the National Forests. The combination of these large timber inventories and the opportunities for more intensive management mean the National Forests have great potential for increased timber production to meet future increases in demand. Commercial timberland and softwood and hardwood volumes by ownership are displayed in tables 3.5 and 3.6. Ninety-six percent of this volume is in the western United States; the National Forests in the three Pacific Coast States contain 54 percent of the National Forest softwood sawtimber inventory and 27 percent of the Nation's softwood sawtimber supply.

Table 3.5--Net Volume of Softwood Sawtimber by Ownership and Region, 1977 (Billion Board-Feet, International 1/4-Inch Log Rule)

	REGION				
Ownership	North	South	Rocky Mountain	Pacific Coast inc. Alaska	Total
Farmer and Other Private	53.8	206.8	53.6	112.5	426.7 (21%)
National Forests	8.0	34.0	260.8	706.5	1009.3 (51%)
Forest Industry	22.7	86.4	23.3	181.9	314.3 (16%)
Other Public	11.9	13.9	42.8	166.6	235.2 (12%)
ALL OWNERSHIPS	96.5 (5%)	341.0 (17%)	380.4 (19%)	1167.5 (59%)	1985.4 (100%)

Source: From Table 3.11, Forest Resource Report No. 23, "An Analysis of the Timber Situation in the United States, 1952-2030."

Table 3.6--Commerical Forest Land and Softwood and Hardwood Growing Stock and Sawtimber Inventories on National Forest Lands, by NFS Regions, 1977

	FOREST SERVICE REGIONS									
	1	2	3	4	5	6	8	9	10	Total
Commercial Forest Land[1] (Million Acres)										
National Forest	12.8	10.1	5.4	9.5	7.9	16.6	11.3	9.2	4.4	87.1
Other Ownership	8.7	6.6	3.9	1.9	9.7	25.8	188.8	142.4	6.8	393.8
Total	21.5	16.7	9.3	11.4	17.6	42.4	200.1	151.6	11.2	480.9
Softwood Growing Stock[1] (Billion Cubic Feet)										
National Forest	28.0	17.7	6.7	20.2	26.6	71.2	10.0	3.5	24.1	208
Other Ownership	13.9	4.0	4.2	6.2	16.9	61.3	84.7	38.4	18.4	248
Total	41.9	21.7	10.9	26.4	43.5	132.5	94.7	41.9	42.5	456
Softwood Sawtimber[2] (Billion Board Feet)										
National Forest	107.8	55.3	27.5	70.4	158.0	386.6	34.4	7.5	161.9	1009.3
Other Ownership	57.9	14.9	18.9	28.3	97.6	340.9	308.7	86.3	22.5	976.1
Total	165.7	70.2	46.4	98.7	255.6	727.5	343.1	93.8	184.4	1985.4
Hardwood Growing Stock (Billion Cubic Feet)										
National Forest	0.1	1.7	0.4	0.5	1.1	1.0	7.6	8.1	.2	20.8
Other Ownership	0.6	2.1	0.4	0.7	2.8	9.5	108.4	108.1	2.3	234.4
Total	0.7	3.8	0.8	1.2	3.9	10.5	116.0	116.2	2.5	255.2
Hardwood Sawtimber[2] (Billion Board Feet)										
National Forest	0.2	3.1	0.9	0.9	3.0	5.4	20.2	14.8	0.8	49.1
Other Ownership	1.7	5.0	1.3	0.8	6.1	28.6	280.3	216.8	3.7	544.4
Total	1.9	8.1	2.2	1.7	9.1	34.0	300.5	231.6	4.5	593.5

[1]National Forest commercial forest land updated to 1983.

[2]International 1/4-inch log rule.

Hardwood growing stock inventories total 255 billion cubic feet. About 70 percent of these inventories is in nonindustrial private ownerships and 12 percent is in forest industry ownerships. The bulk of the hardwood timber in these ownerships is in the East, about equally divided between the North and South. The National Forests contain only 8 percent of the hardwood growing stock inventory.

The current growth-removal balances show that the hardwood forests and eastern softwood forests can support additional timber harvests. Balances will change, and future supplies, particularly those in the decades beyond 2000, could vary over a wide range. Nonetheless, assuming commercial forest owners continue to respond to price and inventory changes and manage much as they have in the recent past, timber harvests can be increased in most regions during the next few decades.

Net annual growth of timber is shown by ownership for four major geographic regions in table 3.7. For all forestlands, current average net annual growth is about 61 percent of the potential growth per acre on fully stocked natural stands. National Forest lands currently average 35 cubic feet per acre per year, about 47 percent of their potential. This average is below other ownerships because of the inclusion of the old-growth stands in the West where mortality is high and net annual growth per acre is low. In the East, where stand characteristics are similar, net annual growth per acre on the National Forests is close to that of the other major ownerships.

Table 3.7--Average Net Annual and Potential[1] Timber Growth Per Acre in the United States by Ownership and Section, 1976

	All Ownerships	National Forest	Other Public	Forest Industry	Farmer and Other Private
North					
Current (cubic feet)	35	43	36	44	33
Potential (cubic feet)	66	63	59	74	66
Current % of Potential	53%	68%	61%	59%	50%
South					
Current (cubic feet)	57	57	54	60	56
Potential (cubic feet)	77	71	71	83	77
Current % of Potential	74%	80%	76%	72%	73%
Rocky Mountain					
Current (cubic feet)	29	30	25	50	25
Potential (cubic feet)	60	64	55	74	51
Current % of Potential	48%	47%	45%	68%	49%
Pacific Coast					
Current (cubic feet)	49	30	53	80	62
Potential (cubic feet)	97	91	88	119	99
Current % of Potetial	51%	33%	60%	67%	63%
United States					
Current (cubic feet)	45	35	42	59	45
Potential (cubic feet)	74	74	68	87	72
Current % of Potential	61%	47%	62%	68%	63%

[1]Potential growth is defined as the average net growth attainable in fully-stocked natural stands without legal constraints, multiple-use requirements and economic considerations. Much higher growth can be attained in intensively managed stands with no constraints.

The data on projected harvests make it clear that there is not likely to be a physical shortage of timber in the United States in the decades immediately ahead, a prospect that exists in much of the world. A comparison of projected supplies with projected demands shows, however, that the demands are rising faster than supplies. Thus, the outlook is one of increasing economic scarcity with rising prices for timber and timber products.

Projected demands on domestic forests for softwood rise to 11.7 billion cubic feet by 2000 and 13.9 billion by 2030. Projected supplies of softwood roundwood from domestic forests show more moderate increases to 11.0 billion cubic feet in 2000 and 11.9 billion by 2030. The outlook for softwood sawtimber is similar--large increases in demand under the given assumptions and modest increases in supplies.

The outlook for the bulk of the hardwood timber--the smaller-sized timber of common species--is somewhat better than that for softwood. However, after 2000, as hardwood inventories begin to show substantial declines in response to increased removals, stumpage prices will increase. The upward price pressures are likely to be strongest in the North Central region.

During recent decades, the inventory of high-quality hardwood species has declined--such as select white and red oak, walnut, hard maple and black cherry. The increases in stumpage prices that occurred in this period for these species have reflected this situation. Such increases are likley to continue. In a competitive economy such as that operating in the timber sector, this means that prices will rise to the extent necessary to bring about an equilibrium between demands and supplies. For example, in the South, the real price for softwood sawtimber stumpage (trees standing in the forest) is expected to rise at an

average rate of 2.1 percent annually during the five decades 1980-2030. In the Douglas-fir subregion of the Pacific Northwest, real prices will rise more slowly, at an average rate of about 1.4 percent annually. Increases in stumpage prices are likely to be fastest in the late 1980s and early 1990s--a response to the effects of the projected surge in homebuilding. Rising stumpage prices will, of course, be reflected in the prices of timber products. For example, softwood lumber and plywood prices, measured in real terms, increase at annual rates of 1.3 percent over the projection period. Real price increases for hardwoods average about 0.8 percent annually for lumber and 0.2 percent for plywood.

Although the outlook is for nationally-increased softwood supplies, there are important differences among the major softwood timber-producing regions. The projected softwood production for the Douglas-fir subregion remains close to the 1980 level of about 2.3 billion cubic feet until 1990 when it declines to about 2 billion, a level that is maintained without much change until 2030. In contrast to the trends on the Pacific Coast, softwood timber supplies in the South are projected to rise from about 4.1 billion cubic feet in 1980 to 7.3 billion cubic feet in 2030. There are small projected increases in softwood sawtimber supplies in the Northeast and the Rocky Mountains.

Projected hardwood supplies will triple, rising from 3.2 billion cubic feet in 1980 to 9.4 billion cubic feet in 2030.

The primary emphasis of the U.S. raw-log trade has been on softwood log exports, which have increased from 210 million board-feet in 1960 to 3,369 million board-feet in 1984. In 1980, trade with Japan accounted for about 80 percent of the total U.S. softwood log exports. By 1984, this had declined to 50 percent of the total. Exports to the Peoples' Republic of China and to Canada have been increasing--in 1984 they were up 19 and 20 percent, respectively, as compared with 1983. In the long run, the major market for U.S. raw logs is expected to be the Far East with Japan, the Peoples' Republic of China and South Korea among the major importers. In 1984, total softwood log exports were about 35 percent of the value of all U.S. solid wood exports and 15 percent of the value of all wood products--solid wood and paper products. Douglas-fir is the primary softwood log species exported, accounting for approximately 47 percent of all softwood log species exported in 1984.

Forest Service studies of log trade issues and price effects have centered on the potential influence of a ban of softwood log exports, particularly those to Japan. The effects of such an action are difficult to predict because Japan may or may not replace U.S. raw logs with finished wood products manufactured in the United States. Japan's domestic forest resources continue to show significant recovery from the effects of World War II, and the Soviet Union has considerable softwood log export potential. Any changes in softwood log exports is likely to affect prices for logs and also returns to landowners.

Hardwood log exports have grown from 56 million board feet in 1960 to 126 million board feet in 1984. Canada and West Germany are the largest markets for U.S. hardwood logs--importing approximately 40 percent and 23 percent of U.S. shipments, respectively, in 1984. These two countries, along with Taiwan, are expected to be growth markets in the future. Red and white oak are the most popular hardwood species exported, accounting for approximately 33 and 22 percent, respectively, of all hardwood species exported in 1984. Even though volumes of hardwood log exports are small, exports tend to be of high quality and desired species. This tends to raise prices for these species, benefiting landowners, but increasing costs to the U.S. domestic hardwood industry.

Hardwood log imports to the U.S. have declined substantially since 1960, from 80 million board feet in 1960 to 30 million board feet in 1984. A low of 14 million board feet occurred in 1980. There has been a general decline in the shipment of tropical hardwood logs worldwide, with an increase in the sawn wood and plywood trade. However, a major portion of the hardwood import decline in the U.S. can be attributed to the reduced demand for mahogany species in the manufacture of fine furniture.

Canadian softwood lumber exports to the United States have also been of increased interest. Canadian softwood lumber consumption in the United States has increased from less than 20 percent of the U.S. softwood lumber market in 1975 to more than 31 percent in 1985. Imports of Canadian lumber are a concern for U.S. producers because the productive capacity in the United States and Canada currently exceeds what the North American lumber market can absorb. This leads to heightened competition, depressed domestic lumber prices, and employee layoffs. At issue is whether or not relief measures should be established to protect the U.S. lumber industry.

Increasing concern over international trade in forest products suggests the need for greater attention to global forestry issues if future needs are to be met. This should include policies dealing with trade and forest management--as well as increased emphasis on research and technical assistance, particularly to aid developing countries.

The National Forest System contains the potential for substantial improvement in wildlife habitat management. These lands provide significant habitat for about 3,000 vertebrates. They contain 83,000 miles of streams, and 2.7 million acres of lakes with potential for expanding the fisheries habitat for commercial as well as sport use. They also contain the key habitat for approximately 92 threatened and endangered species as Federally listed on January 1, 1986.

Based on recent harvest data and resource inventories, wildlife and fish market products from National Forest lands have increased or could increase. For example, some 18 million furs were harvested in the 1979-80 season, 2.6 times the number harvested in 1971. Annual commercial salmon harvests (the most valuable species) produced from these lands have reached 112 million pounds and with investments in habitat improvement could rise to 172 million pounds.

The potential increase in anadromous fish production from harvest management, and the Salmon and Steelhead Habitat Opportunities Program, provide a direct dollar return to the national economy and benefit our balance of trade through the export of additional salmon products to foreign countries. The program can be expected to increase indirect benefits by as much as 12,000 new jobs, several hundred commercial and sport boat purchases, equipment, and also to have other economic effects.

Wildlife and fish populations are an important part of the recreation appeal of the NFS, and contribute to the stability of many private industries dependent on outdoor recreation. There have also been rising trends in the recreation uses of wildlife and fish. For example, sales of hunting and fishing licenses have increased almost 50 percent in the last 20 years. These trends are expected to continue.

PROTECTION AND SUPPORT ACTIVITIES

The Forest Service has management responsibility for the 191 million acres of National Forest System lands and waters. About 30 million of these acres (16 percent) are not fully available for use because of unmarked boundaries, limited access, unauthorized uses, or poor ownership patterns. The National Forests contain many facilities needed to support resource administration, public use, and utilization of the resources: 330,000 miles of road; 1,500 large dams; 11,200 buildings; 272,000 miles of property boundaries; and an unknown number of cultural resource sites.

Pests of all kinds, including insects, diseases, plants, and animals detract from the quality, productivity, and safety of forest and range lands. Actions may be necessary to prevent or reduce losses caused by such pests. In addition, the Forest Service maintains capabilities to respond with biological, chemical, and mechanical measures to control serious outbreaks as they are detected. While the use of pesticides has been an important part of this work and has been carefully regulated, there is public debate about the health and environmental effects of using chemicals for pest control.

Forest and range fire management provides protection to property and wildland resources from wildfire. Prescribed fire is used, where appropriate, to protect and enhance the productivity of forests and associated resources. As resource activity increases, so does the threat of damaging fire. Losses caused by fires on National Forest lands have averaged $67 million per year (1978-1982).

A primary Forest Service responsibility is to protect, conserve, and enhance the basic soil productivity to ensure a continued supply of outputs. Soil and water conservation practices are an integral part of all management activities to ensure that this stewardship responsibility is met.

Management activities that affect air quality contain measures to reduce air pollution from forest and range activities. This is accomplished by research, development, and application of improved management practices to reduce air pollution.

The Forest Service cooperates with State and local governments in the enforcement of laws, ordinances, and regulations involving the protection not only of natural resources and facilities, but also of persons and their property when they are visiting National Forests. The need for continued emphasis on law enforcement is evidenced by increasing vandalism and violence on public and private lands: in 1980, law enforcement personnel responded to approximately 60,000 crimes on National Forests, compared with approximately 35,000 in 1977.

The Forest Service also has responsibility for cooperative programs and for forest and range research. Nationwide cooperative programs are conducted with State forestry agencies to protect and improve some 1.4 billion acres of forests, rangelands, and related resources in private and non-Federal public ownership. A comprehensive research program, in cooperation with other research agencies and institutions, is aimed at solving problems relating to management of all types and ownerships of forests and associated rangelands, and at expanding uses of these natural resources.

INTERNATIONAL FORESTRY

There are no reliable data on the exact acreage of forest and range lands in the world. Estimates indicate there are about 6 billion acres of forest and another 3 billion acres of open woodlands and savannas. Data available indicate there are also huge areas of treeless grasslands.

Rising demands of a rapidly expanding world population exceed the capacity of forest and range lands to sustain the mix of uses necessary for stable and productive societies under current investments in management. The destruction of forests in the humid tropics and in the arid and semiarid regions of the world is of particular significance. The resulting environmental consequences threaten not only future wood and forage supplies, but also food production, climate, and the habitability of the land itself. For more information, see appendix J.

ECONOMIC AND SOCIAL FACTORS

Economic Factors

The Nation is undergoing a transition from resource-based industries, such as agriculture, forestry, fishing, and mining, and from manufacturing to greater diversity and growth in services. This transition varies geographically. The eastern, urban U.S. is becoming less industrial and increasingly service oriented. The Southeast, Mountains and Plains, and to an extent, the Far West, which are more rural, are exhibiting employment declines in resource-based industries and rapid growth in manufacturing and services. Parts of the Mountains and Plains, however, have experienced a boom from energy development. Agriculture and forest products are still of major importance in the Far West, Mountains and Plains, and the Southeast, and will remain so.

Regional income and employment are affected by the transition in these regions. As employment shifts to manufacturing and services, individual incomes would increase. Concentration of resource-based industries and manufacturing in a region is generally associated with low incomes and more employment than a more diversified economy. However, areas experiencing rapid oil and gas development have had high incomes and growth in employment. The proportion of the earnings from various industries and from interregional exports of goods and services affects regional income and employment.

Traditionally, resource-based industries and manufacturing have been considered to be basic to economic growth, while services have been nonbasic or result from economic development. This distinction is not clearcut. For example, a region can gain income from neighboring regions through tourism. Conditions which support the growth of services and stability in resource-based industries and manufacturing would have greater positive economic effects within a region than conditions which promote narrowing of economic activities.

Social Factors

In 1980, the U.S. population was 226 million, an 11.5-percent increase from 1970. The density, rate of increase, and rural-urban distribution of Americans varies widely by geographic region, with differing effects on local lifestyles and patterns of forest use. Population density is greatest in the East where National Forests are relatively scarce, but population growth is very slow. Over the past decade the Northeast remained stable in population and the Midwest and Upper Plains gained only 4 percent. Growth was most rapid, averaging 37 percent, in the eight sparsely populated Mountain states where there is an abundance of National Forest lands. The influx was motivated in part by energy and mineral development and by increased interest in the natural amenities of these states. Growth averaged 20 percent in the South and Far West.

Forest Service activities affect communities in the following ways:

Effect	Common Examples
Socioeconomic	Shifts in locally available employment, per capita income, community size and requirements for public and private facilities and services.
Sociocultural	Changes in population composition (age, sex, ethnic makeup) or spatial distribution, the introduction of new lifestyles and values, and changes in local institutions and traditions.
Esthetic or Amenity	Environmental changes affecting lifestyles and enjoyment of nature (affecting air or water quality, wildlife, vegetation, solitude, recreation or transportation routes).

Depending on the nature of the action, social effects may be local to national in scale, affecting the lives from a very small to a rather large portion of the population. When estimating the magnitude of local effects it is important to determine whether a proposed action complements, clashes with, or has relatively little impact on local conditions. Thus a particular proposal may be perceived as largely beneficial in one area and as undesirable in another because of differing local values, economic conditions, or proximity to the action.

Civil Rights, Minorities and Women

Federal laws and agency policies require the Forest Service to accord equal treatment to all citizens, regardless of age, sex, race, or ethnic heritage. Other legislation, including the Preservation of American Antiquities Act of 1906 (Ch. 431, 36 Stat. 855), the American Indian Religious Freedom Act of 1978 (P.L. 95-341), and various treaties direct the agency to protect certain forest sites or to permit access to them for use by specific groups.

Many Native Americans reside on tribal reservations or on private lands in the vicinity of National Forests or Grasslands. They constitute a large percentage of the population in several States that contain extensive National Forest lands.

In the Far West there are large populations of Africans, Asians, and Hispanics. In the Mountains and Plains, Hispanics are the most prevalent in Arizona, Colorado, and New Mexico; and Native American populations are high in Arizona, New Mexico, Montana, and the Dakotas. In the Eastern and Southern regions, blacks comprise 10 to 35 percent of the population in 20 states. Most blacks live in cities in the East but many live in the rural areas in the South.

Direct participation in National Forest activities by urban-based minorities is relatively limited. Rural minorities often visit National Forests and may also have cultural or amenity ties to specific areas. In addition, rural blacks, Native Americans, and Hispanics often hunt, fish, or graze livestock on National Forest lands.

Historically, the use of forests by women has shifted. Early in this century, when the majority of the Nation's population lived on farms or in small towns, many families harvested forest resources. Entire families cooperated in obtaining firewood, game and fish, edible roots and berries, and other necessities. Today's population is 74 percent urban and recreation is the major direct relationship of most families to the National Forests. Women increasingly participate in other National Forest activities such as camping, fishing, hiking, boating, photography, and nature study.

Forest Service equal employment opportunity and promotion programs are designed to assure that the number of women and minorities employed is commensurate with their availability in the civilian labor force. These programs presently exist and will continue. The Forest Service is also making greater efforts to adapt facilities for the elderly and handicapped.

Chapter 4:

Environmental Consequences

INTRODUCTION

This chapter discusses the environmental consequences of implementing the alternatives presented in chapter 2. A primary source of information for this chapter is the analysis of environmental effects prepared by each of the nine Forest Service Regions and the Northeastern Area for each alternative. The effects are the changes expected for each alternative using 1982 conditions as the base.

Environmental consequences are discussed separately for each alternative. A description of the environment affected by all the alternatives is found in chapter 3. Discussions often center around Regional consequences; these Regions are delineated on the maps on pages 3-5 in chapter 1.

Technical and uncommon terms are defined in the Glossary. Methods of analysis are found in appendix E. The results or outputs, activities, and costs are discussed in detail in chapter 2 as is a comparative analysis of alternatives. Regional tables for economic effects, soil and water quality indices, and variations in visual condition classes are found in appendix K.

The following information on each of the general categories of environmental consequences is provided to help explain the analysis and the meaning of some of the tables and narratives.

Economic Effects

Each alternative is analyzed with respect to several factors that relate to economic efficiency. The primary economic efficiency factor is present net value (PNV) which is defined as discounted benefits minus discounted costs. Present net value is calculated and displayed in three versions: (1) PNV-total: (2) PNV-market; and (3) PNV-receipts. The present value costs are identical in all three versions; only the calculation of present value benefits varies as follows: PNV-total is calculated by assigning estimated market prices (values) to all resources produced from NFS lands (appendix F contains a complete tabulation of the values used in calculating PNV-total). PNV-market is calculated by assigning the values from appendix F to the resources that are normally bought and sold in the market- place, i.e. timber, range, minerals, commercial fish and pelts, and water. PNV-receipts is calculated using an estimate of the actual dollars returned to U.S. Treasury from the sale of NFS outputs, which include timber, minerals, range, and some recreation. The returns to Treasury receipts are shown by Region in appendix K.

Other economic factors considered were annual costs and benefits, returns to states, and consumers' benefit. Unit costs played a major role in data validation. Income and employment effects are also shown in the Regional tables in appendix K.

Annual costs and benefits are undiscounted costs and undiscounted total benefits for three representative years: 1986, 1990, and 2030. The returns to Treasury factor is explained above. Returns to States represents the portion of the U.S. Treasury receipts that are distributed to the States. Consumers' benefit is the difference between the total annual program benefits and the returns to Treasury. Generally, consumers' benefit is viewed as a subsidy or income transfer to resource users.

Employment and income effects are most significant at the Regional level, consequently they are presented only in the Regional tables in appendix K. Benefits are derived by multiplying the values in appendix F times the resource outputs from each alternative. The conceptual basis for RPA values is also described in appendix F.

The Timber Assessment Market Model (see appendix E) was used to estimate the stumpage price effects from NFS timber harvest, softwood lumber prices, and harvest levels on private land that would likely be associated with each alternative.

Social Effects

Forest Service activities affect both forest users and the general public. The social areas considered here are: lifestyle, attitudes, beliefs, values, social organization, population, land-use patterns, and civil rights. These variables are discussed under each alternative. For a general introduction to this subject, see chapter 3, Social Factors.

Physical Effects

Soil Productivity and Water Quality

Long-term soil productivity and water quality have been evaluated for each alternative. Key management activities, such as road construction, timber harvest, and range improvements were selected and acreages affected by each activity were estimated. The number of acres involved in these key management activities is displayed by alternative and Region in appendix K. Because the potential for soil erosion and reduced water quality increases directly with the amount of soil disturbing activities, the actual acres disturbed by the management activities are displayed in this chapter by alternative. In order to establish actual acres disturbed from the total acres involved in a particular activity, weighting factors were applied. These factors follow:

Activity	Weighting Factor
Timber Harvest	0.10
Reforestation	0.20
Fuel Breaks	0.10
Minerals (Energy and Nonenergy)	0.75
Roads (Local, Arterial, and Timber Purchaser)	1.00
Range Improvements (Nonstructural)	0.50
Wildlife Improvements (Nonstructural)	0.30
Watershed Improvements	1.00

In order to arrive at actual acres disturbed, multiply the acreage involved in an activity by the weighting factor. For example, if 200 acres were involved in timber harvesting only 20 acres (200 acres multiplied by 0.10) would actually have soil disturbance.

Each of the activities listed above affect the soil or water resource; the tables by alternative are organized to display these effects separately.

Since long-term soil productivity and water quality must be maintained to meet legal requirements, the acreage breakdown is used to provide the reader with a relative measure by which to compare the alternatives. The acres of soil disturbance provide an indication of expected mitigation costs. Legal requirements would be met in all alternatives and mitigating costs would rise in relation to other resource activities. Improved utilization of forest resources may foster improved air quality. Greater insect and disease management, and increased wilderness management will reduce the risk of impacts by increasing information on conditions. External influences will be more important to monitor than Forest Service activities.

Cultural Resources

Cultural resources will be managed to ensure their protection and maintenance on National Forest lands. The cultural resource activities consists of inventory work in support of ground disturbing projects such as timber harvesting and minerals exploration. Once identified, cultural resources are protected, primarily through avoidance. Where inventory work identifies significant cultural resource values, mitigating actions are completed before other activities are carried out. Mitigation of impacts includes relocation of projects, creation of buffer areas, and/or data recovery and documentation of the site.

Visual Quality

During the past two decades, much public concern has been expressed about the visual values of the forest environment. Forest Service managers have adopted techniques which acknowledge that the management of vegetation and other resources is needed to perpetuate desirable visual conditions while also meeting other important resource utilization goals. The proper application of visual resource management principles can mitigate the visual consequences caused by intensive land management activities. By comparing the existing condition of each of the alternatives and the Recommended Program in the year 2000, we can see how visual values are affected. Regional effects are displayed in appendix K and the national summary is in chapter 2.

Five visual condition classes are used to give an indication of the amount of man-caused activity that is visually evident. They are described below:

Class	Abbr.	Description
Preservation	P	Where management will not intrude on natural occurances.
Retention	R	Where management activities are not visually evident.
Partial Retention	PR	Where management activities usually remain visually subordinate.
Modification	M	Where management activities in foreground and middle ground may be dominant, but they must borrow from the natural scheme of things.
Maximum Modification	MM	Management activities are dominant, but appear as natural occurrences when seen as background.

Biological Effects

Timber Productivity

The effects displayed for timber productivity for each alternative are: (1) Long-Term Sustained Yield Capacity, which is the highest uniform wood yield that can be harvested from lands being managed for timber production, consistent with multiple-use objectives; (2) Lands Suitable for Timber Production; and (3) Total Timber Sale Volume, which is the timber planned for sale and harvest. Sale schedules are displayed for the years 1986, 1990, and 2030.

Wildlife and Fish

The Forest Service manages habitat for approximately 3,000 vertebrate species which have highly varied habitat requirements. This precludes discussing the fish and wildlife effects for each species. Therefore, management indicator species which represent a variety of habitats have been selected to identify the effects of management. The management indicator species tables, found in chapter 2, display species which are commonly hunted or fished, require special habitats, or are Federally classified as endangered or threatened.

Wildlife and fish habitat on National Forest System lands is affected in two ways: by direct wildlife and fish capital investments; and by other resource management activities such as mining, timber harvest, and range improvement. In determining the effects of each alternative on fish and wildlife habitat both the direct capital investments and other resource management activities were considered. The discussion in this chapter highlights the most significant consequences from a national perspective.

ENVIRONMENTAL CONSEQUENCES BY ALTERNATIVE

Recommended Program

Economic

Table 4.1 shows the economic attributes of the Recommended Program at the national level. PNV-total is 103.9 billion dollars at the High Bound and 77.8 billion dollars at the Low Bound; PNV-market, 25.6 billion dollars at the High Bound and 21.7 billion dollars at the Low Bound; and PNV-receipts, 4.8 billion dollars at the High Bound, and 3.6 billion dollars at the Low Bound. A comparison of annual

costs and benefits shows that annual benefits exceed costs by 175 percent at both Bounds in 1986 increasing to 350 percent at the High Bound and 275 percent at the Low Bound by 2030. Actual Treasury receipts increase from about 1.3 billion dollars in 1986 to a 2030 level of 3.4 billion at the High Bound and 2.9 billion at the Low Bound. Annual costs exceed Treasury receipts by about 3 percent at both Bounds in 1986; however, receipts are expected to exceed annual costs by about 42 percent at the High Bound and 28 percent at the Low Bound by 2030. Consumers' benefit increases from 2.4 billion dollars at both Bounds in 1986 to 7.5 billion dollars at the High Bound and 5.7 billion dollars at the Low Bound in 2030. Softwood lumber imports will decline from 1990 to 2030 by about 29 percent at the High Bound and 30 percent at the Low Bound while average softwood lumber prices will increase by about 40 percent during the same period. Harvest of softwood on private lands will increase about 56 percent at the High Bound and 59 percent at the Low Bound by 2030.

At the Regional level, employment will increase significantly throughout the planning period (appendix K). The largest income and employment effects are likely to be in Regions 2, 3, 6, 8 and 10.

Table 4.1--Economic Effects - Recommended Program - 1982 Dollars

Effects	Unit	LOW BOUND Years 1986	LOW BOUND Years 1990	LOW BOUND Years 2030	HIGH BOUND Years 1986	HIGH BOUND Years 1990	HIGH BOUND Years 2030
Present Net Value (Total)	Bil $	77.8	--	--	103.9	--	--
Present Net Value (Market)	Bil $	21.7	--	--	25.6	--	--
Present Net Value (Receipts)	Bil $	3.6	--	--	4.8	--	--
Total Costs	Mil $	1,352	1,211	2,282	1,352	1,827	2,420
Total Benefits	Mil $	3,716	4,140	8,605	3,716	4,923	10,924
Returns to Treasury	Mil $	1,312	1,700	2,928	1,312	1,885	3,425
Returns to States	Mil $	328	425	732	328	471	856
Consumers' Benefit	Mil $	2,404	2,440	5,677	2,404	3,038	7,499
Softwood Lumber Imports	Mil BF	NA	2,666	8,854	NA	12,573	8,907
Softwood Harvest (priv. land)	Mil BF	33,965	46,230	53,905	33,965	45,570	52,885

Social

Lifestyles.--The mix of resources produced at the High Bound will generally enhance the lifestyles of those dependent on the commodity (including developed recreation) values of the forest in most Regions. Investments in commodity production will increase employment opportunities in forest-based industries and the backlog of facility and site maintenance will be eliminated.

Development in the Intermountain, Pacific Northwest, and Alaska Regions will impact on amenity dependent lifestyles because of physical disturbances associated with timber and mineral activities. At the Low Bound, both commodity and amenity dependent lifestyles will be affected. This will be due to the stagnation of employment opportunities in forest dependent industries and the further decline in recreation facilities as the maintenance backlog increases through 1990. New investments in recreation facilities and wildlife habitat will not increase until after 1990.

Attitudes, beliefs, and values.--At the High Bound investments in commodity production would appeal to potential developers and others who favor expanded employment and business activity. Amenity oriented users may feel a sense of lost opportunity because of increased allocation of land to commodity production. The Program would increase local concerns that rural values and traditions would be lost or weakened when outside interests expand their operations and additional people enter the area. Conflict will continue between commodity and amenity oriented users of the forest. At the Low Bound of the Program the potential for conflict will be reduced because of lower commodity investments.

Social organization.--The Recommended Program at the High Bound would expand the economic base of neighboring communities and generate additional sales and employment for local and regional businesses. Normally this would contribute to community stability and well-being because many communities have the facilities and surplus labor to accommodate moderate increases in economic activity. Nationally this would reduce unemployment and the emmigration of residents. Local revenues from National Forest activities would gradually increase, permitting improvement of public facilities and services.

When a major new development or several smaller projects occur with insufficient planning and resources to provide for the influx of employees, rapid local growth may overburden available community facilities and services. This would create hardships for both new and established residents, particularly in rural areas.

At the Low Bound, expansion of the local community economic base will not begin to occur until after the year 1990. After that, effects would be similar, but lower, than the High Bound.

Population and land use.--At the High Bound, the population of forest communities would increase in response to growing employment opportunities. This is critical in the Mountain and Far West Regions where existing growth is already rapid. It would require a moderate increase in the intensity of forest and adjacent community land use with more attention needed to coordinate land-use planning. At a national level this would not be significant, but locally affected communities may need to accommodate rapid growth.

At the Low Bound, population increases would continue in some local communities where people are attracted by the environmental amenities of the forest setting. After 1990 moderate population gains associated with increased employment opportunities will begin to occur.

Civil rights.--At the High Bound, growing employment opportunities would result in increased opportunities for hiring minorities and women. At the Low Bound, agency equal employment opportunities would remain at existing levels through 1990. Opportunities for hiring minorities and women will increase after 1990.

Physical

Long-term soil productivity and water quality.--The annual acreage of soil disturbance increases substantially between 1986 and 2000 at both the Low and High Bounds of the Program. Beneficial soil disturbing activities in the year 2000 are 84 percent greater at the Low Bound and 104 percent greater at the High Bound, while potentially adverse soil disturbance increases by 21 percent at the Low Bound and 22 percent at the High Bound. Long-term soil productivity and water quality show a gradual improvement over the current situation. Table 4.2 displays the soil disturbing activities for the Recommended Program.

Table 4.2--Acres of Soil Disturbed - Recommended Program

Activities	Base year 1986	Year 2000	
		Low Bound	High Bound
		(Thousand Acres)	
Beneficial			
Reforestation	73.8	88.5	90.7
Range Improvement	51.0	117.9	130.8
Wildlife Improvement	81.5	156.0	182.6
Watershed Improvement	7.6	30.6	32.7
TOTAL	213.8	393.0	436.8
Potentially Adverse			
Timber Harvest	166.5	193.6	204.9
Fuel Breaks	30.7	45.4	46.3
Minerals (Energy & Nonenergy)	98.2	116.6	113.6
Roads (Local, Arterial and Timber Purchaser)	25.5	32.3	32.4
TOTAL	320.9	387.9	397.2

Cultural resources.--The High Bound of the Recommended Program will have some positive changes over the existing program but the overall effects will be minimal. At the Low Bound increased emphasis does not begin to occur until after 1990. At both Bounds, all known or newly discovered sites will be either protected or adverse effects mitigated. Surveys outside of project areas would proceed at a rate to allow completion on each Forest in 2030 at the High Bound and 2035 at the Low Bound. A greater emphasis would be placed on mitigation at both Bounds.

Visual quality.--Generally, at both Bounds of the Program between 1986 and 2000, there is a shift from a visual character where management activities are not visually evident to landscapes where management activities are dominant. This trend is almost as significant at the Low Bound as it is at the High Bound (table 4.3). The largest shift occurs in Region 5.

Table 4.3--Acres by Visual Condition Classes - Recommended Program

Class	Base Year 1986	Year 2000	
		Low Bound	High Bound
		(Million Acres)	
Preservation	57.18	53.40	53.00
Retention	37.55	35.52	35.42
Partial Retention	39.43	41.26	42.00
Modification	36.62	38.96	39.33
Maximum Modification	17.40	20.65	20.04

Biological

Timber productivity.--At the High Bound, timber sales increase slightly from 1986 through 1990, and then rise until 2030. At the Low Bound, timber sales decline from 1986 to 1990, then rise steadily through 2030. In table 4.4, the High Bound long-term sustained yield capacity (LTSYC) reflects current trends which do not include the High Bound assumption about increasing technological innovation. This assumption about technology does account for the High Bound timber sale volume in 2030. If the same set of assumptions were used, the future sale volume would be less than LTSYC. At the Low Bound, forest productivity would reach 91 percent of long-term sustained yield capacity in 2030.

Table 4.4--Timber Productivity Effects - Recommended Program

Effects	Unit	Low Bound			High Bound		
		1986	1990	2030	1986	1990	2030
Lands Suitable for Timber Production	Mil Acres	60.5	60.5	60.5	63.6	63.6	63.6
Long-Term Sustained Yield Capacity	Bil BF	17.2	17.2	17.2	17.8	17.8	17.8
Timber Sale Volume (Offered)	Bil BF	11.4	9.0	15.6	11.4	11.6	20.0

Wildlife and fish.--Two wildlife and fish aspects will receive a special emphasis annually between 1988 and 2000 at the High Bound. The first includes providing the necessary biological information and appropriate actions needed to improve coordination and mitigation for T&E species and ensure the completion of recovery schedules by 2000. Without effective management for these species, as other resource demands increase, the costs associated with mitigation, appeals, and litigation relevant to wildlife management will increase sharply. The second emphasis item provides for the restoration of key habitat for salmon and steelhead in order to fulfill objectives and recommendations made with cooperating States in the Salmon and Steelhead Habitat Opportunities (SSHO) Program.

Special emphasis work in the Low Bound will be deferred until after 1990 and will then be accomplished over 15 to 20 years. The objectives remain the same, but the results may be less by 2030 because of the delay. Commercial fisheries habitat restoration work will not influence production until nearly 2000 except in R-10. The Low Bound, prior to 2000, will provide less habitat capability and will delay accomplishment of the T&E objectives and other resource activities needing wildlife coordination.

At the High Bound, white-tailed deer habitat will increase by 10 to 20 percent in Regions 2, 3, and 8. In Region 3, elk and mule deer habitat will increase by 15 to 20 percent, respectively. In Regions 1, 4, 5, 6, 9, and 10 habitat for big game management indicator species will remain relatively unchanged except for a decline of 20% in turkey habitat in Region 8 and of 5% in Region 9. At the Low Bound, habitat for big game management indicator species will remain relatively unchanged in Regions 1, 2, 3, 4, 5, 6, and 10. In Region 8, turkey habitat will decline 5 percent. In Region 9, turkey and white-tailed deer habitat will decline 10 percent (Table 2.42).

At the High Bound, fish productivity would remain relatively unchanged in all Regions except Region 3 where resident trout habitat will increase by 10 percent and warm water fish habitat will increase by 15 percent. At the Low Bound, fish productivity would decline in Regions 4 and 9. In Region 4, habitat for resident trout and anadromous fish would decline 5 and 10 percent, respectively. In Region 9, habitat would decline 20 percent for resident trout, 15 percent for warm water fish, and 20 percent for anadromous fish.

Alternative 1 - Constant Output

Economic

Table 4.5 shows the economic attributes of Alternative 1 at the national level. PNV-total is 67.6 billion dollars; PNV-market, 24.7 billion dollars; and PNV-receipts, 8.4 billion dollars. Actual Treasury receipts increase from about 1.4 billion dollars in 1986 to 3.2 billion dollars in 2030. A comparison of annual costs and benefits shows that benefits exceed costs by 138 percent in 1986 and this increases to almost 300 percent by 2030. Annual costs are expected to exceed Treasury receipts by about 22 percent in 1986, but this is reversed by 2030 when receipts are expected to exceed annual costs by about 94 percent. Consumers' benefit increases about 25 percent from 1986 to 2030. Imports will decline by about 25 percent during the same period. Harvest of softwoods on private lands would increase about 50 percent by 2030 as a result of implementing Alternative 1.

At the Regional level, employment will increase moderately throughout the planning period (appendix K). The largest income and employment effects are likely to be in Regions 1 and 6.

Table 4.5--Economic Effects - Alternative 1 - 1982 Dollars

Effects	Unit	Years		
		1986	1990	2030
Present Net Value (Total)	Bil $	67.6	--	--
Present Net Value (Market)	Bil $	24.7	--	--
Present Net Value (Receipts)	Bil $	8.4	--	--
Total Costs	Mil $	1719	1740	1657
Total Benefits	Mil $	4104	4207	6613
Returns to Treasury	Mil $	1408	1886	3210
Returns to States	Mil $	316	420	724
Consumers' Benefit	Mil $	2697	2321	3403
Softwood Lumber Imports	Mil BF	N/A	12573	9396
Softwood Harvest (priv. land)	Mil BF	33965	45570	50830

Social

Lifestyles.--Changes in the mix of resource activities are expected to occur gradually and have little noticeable effect on lifestyles in most forest communities. Total income would increase in direct proportion to increases in employment levels with no significant effect on material living standards. Effects on lifestyle would be somewhat more pronounced in forest communities in the Mountains and Plains where mineral activities and developed recreation increase. These activities usually result in an immigration of people with new lifestyles and values.

Attitudes, beliefs, and values.--Alternative 1 combines multiple use of resources with various constraints to protect the environment. It reflects many years of value compromises among individuals and groups with an interest in agency activities.

Social organization.--The majority of National Forests and Grasslands are located in sparsely populated areas. Under this alternative only gradual changes would occur and the existing levels of community stability and cohesion would not be affected significantly. Social institutions such as the family, school, and local government would seldom experience abrupt changes due to agency activities. Exceptions could occur in the vicinity of major site-specific projects such as new mines, recreation complexes, or power generating facilities.

Population and land use.--On a national basis, this alternative would have little effect on the population of forest-dependent communities. Some land-use patterns may change under this alternative, but this would occur slowly and in limited locations.

Civil rights.--Agency equal employment opportunities would remain at existing levels.

Physical

Long-term soil productivity and water quality.--Nationally, the number of acres disturbed annually remains relatively constant between 1986 and 2000. Beneficial soil disturbing activities are up 41 percent in the year 2000, while potentially adverse soil disturbing activities are 2 percent greater. Long-term soil productivity and water quality remain fairly constant. Table 4.6 displays the soil disturbing activities for Alternative 1.

Table 4.6--Acres of Soil Disturbed - Alternative 1

Activities	Years	
	1986	2000
	(Thousand Acres)	
Beneficial		
Reforestation	73.8	76.1
Range Improvement	51.0	110.0
Wildlife Improvement	81.5	99.8
Watershed Improvement	7.6	16.0
TOTAL	213.9	301.9
Potentially Adverse		
Timber Harvest	166.5	154.0
Fuel Breaks	30.7	42.9
Minerals (Energy and Nonenergy)	98.2	104.0
Roads (Local, Arterial and Timber Purchaser)	25.5	26.7
TOTAL	320.9	327.6

Cultural resources.--This alternative would result in a large number of areas that must be avoided because nonentry is the only economical mitigation measure. Thus, these areas are often unavailable for commodity production. No significant irretrievable loss of cultural resource values would result from this alternative. However, significant properties may eventually be lost to weathering or destroyed if avoidance is the only mitigation measure applied.

Visual quality.--Generally this alternative reflects little change in visual character from the current management situation except for a few parts of the country (table 4.7). Region 5 projects the greatest shift from lands where management activities are not visually evident to lands where management activities are dominant. The same trend is true for Region 6, but to a lesser degree.

Table 4.7--Acres by Visual Condition Classes - Alternative 1

Class	Years	
	1986	2000
	(Million Acres)	
Preservation	57.18	48.89
Retention	37.55	37.52
Partial Retention	39.43	41.94
Modification	36.62	36.06
Maximum Modification	17.40	23.77

Biological

Timber productivity.--Timber sale volumes remain relatively constant to the year 2030 (table 4.8). Forest productivity would reach 64 percent of long term sustained yield capacity by 1990.

Table 4.8--Timber Productivity Effects - Alternative 1

Effects	Unit	Years		
		1986	1990	2030
Lands Suitable for Timber Production	Mil Acres	64.0	64.0	64.0
Long-Term Sustained Yield Capacity	Bil BF	16.4	16.4	16.4
Timber Sale Volume (offered)	Bil BF	11.2	11.1	10.5

Wildlife and fish.--Wildlife and fish capital investments are not sufficient to offset the adverse effects of commodity activities and natural plant succession which converts early successional vegetation to less desirable vegetation. Wild turkey habitat in Region 3 would decline by 10 percent.

Habitat would decline by 10 percent for resident trout in Regions 3 and 9, and by 5 to 15 percent for anadromous fish in all Regions. These impacts would result from the fisheries capital investment program being insufficient to offset the impacts of timber harvest and road construction.

Habitat for species dependent on old growth or standing dead trees would decline due to the removal of overmature timber stands. The most significant impact would be a 40-percent decline in spotted owl habitat. Habitat for riparian dependent species would remain stable in this alternative.

The increases in ski area developments in Region 2 would impact big game, especially mule deer and elk. Developments associated with ski areas would further impact the declining winter range acreage on lands adjacent to National Forests.

Alternative 2 - High Market

Economics

Table 4.9 shows the economic attributes of Alternative 2 at the national level. PNV-total is 88.0 billion dollars; PNV-market, 26.0 billion dollars; and PNV-receipts, -4.2 billion dollars. Actual Treasury receipts increase from 1.4 billion dollars in 1986 to about 3.3 billion dollars in 2030. A comparison of annual costs and benefits show that benefits exceed costs by more than 100 percent in 1986 and this increases to nearly 300 percent by 2030. Annual costs are expected to exceed Treasury receipts by about 42 percent by 1986, but this is reversed by 2030 when receipts are expected to exceed annual costs by about 30 percent. Consumers' benefit increases from 2.8 billion dollars in 1986 to nearly seven billion in 2030. Imports will decline by about 29 percent from 1990 to 2030 while average softwood lumber prices will increase by about 40 percent during the same period. Harvest of softwoods on private lands will increase about 55 percent by 2030 as a result of implementing Alternative 2 on NFS lands.

At the Regional level, employment will increase moderately throughout the planning period (appendix K). The largest income and employment effects are likely to be in Regions 1, 2, 8, and 9. These effects are consistent with the emphasis on the resource-based industry in these Regions.

Table 4.9--Economic Effects - Alternative 2 - 1982 Dollars

Effects	Unit	Years		
		1986	1990	2030
Present Net Value (Total)	Bil $	88.0		
Present Net Value (Market)	Bil $	26.0	--	--
Present Net Value (Receipts)	Bil $	-4.2	--	--
Total Costs	Mil $	2015	2277	2536
Total Benefits	Mil $	4242	4912	10087
Returns to Treasury	Mil $	1421	1932	3288
Returns to States	Mil $	316	427	751
Consumers' Benefit	Mil $	2820	2980	6799
Softwood Lumber Imports	Mil BF	N/A	12489	8907
Softwood Harvest (priv. land)	Mil BF	33965	44040	50830

Social

Lifestyles.--This alternative would lead to increased employment opportunities in timber, mining, grazing, and other market-oriented industries. The market emphasis would result in an influx of people to many forest communities. Where this occurs, moderate adjustments in some occupations (such as ranching and logging) and lifestyles within communities would result over time. Although there would be variations in the mix of market industries found in each Region, the anticipated lifestyle effects would not vary significantly among Regions. More large site-specific projects would be expected in the largely rural Mountain and Plains Region.

Attitudes, beliefs, and values.--An emphasis on developing market resources would appeal to potential developers and others who favor expanded employment and business activity. This alternative would increase local concerns that rural values and traditions would be lost or weakened when outside interests expand their operations and additional people enter the area.

Social organization.--This alternative would expand the economic base of neighboring communities and generate additional sales and employment for local and regional businesses. This would contribute to community stability and well-being because many communities have the facilities and surplus labor to accommodate moderate increases in economic activity. Nationally this would reduce unemployment and the emmigration of residents. Local revenues from National Forest activities would gradually increase, permitting improvement of public facilities and services.

When a major new development or several smaller projects occur with insufficient planning and resources to provide for the influx of employees, rapid local growth may overburden available community facilities and services. This would create hardships for both new and established residents, particularly in rural areas.

Population and land use.--Under this alternative, the population of forest communities would increase in response to growing employment opportunities. This is critical in the Mountain and Far West Regions where existing growth is already rapid. It would require a moderate increase in the intensity of forest and adjacent community land use with more attention needed to coordinate land-use planning. At a national level this would not be significant, but may cause acute problems for some localities.

Civil Rights.--Growing employment opportunities would result in increased opportunities for hiring minorities and women.

Physical

Long-term soil productivity.--Nationally, the annual number of acres actually disturbed increases substantially between 1986 and 2000. Beneficial soil disturbing activities are 129 percent greater in the year 2000, while potentially adverse soil disturbance is 53 percent higher. Long-term soil productivity and water quality show a gradual improvement over the current situation. Table 4.10 displays the soil-disturbing activities for Alternative 2.

Table 4.10--Acres of Soil Disturbed - Alternative 2

Activities	Years	
	1986	2000
	(Thousand Acres)	
Beneficial		
Reforestation	73.8	130.2
Range Improvement	51.0	179.9
Wildlife Improvement	81.5	141.2
Watershed Improvement	7.6	39.2
TOTAL	213.9	490.5
Potentially Adverse		
Timber Harvest	166.5	258.0
Fuel Breaks	30.7	69.2
Minerals (Energy and Nonenergy)	98.2	117.6
Roads (Local, Arterial and Timber Purchaser)	25.5	45.6
TOTAL	320.9	490.4

Cultural resources.--The potential for adverse effects on cultural resources increases with this high market emphasis. Cultural resource surveys, evaluations, and planning activities would also be significantly expanded and eventually lead to increased efficiencies in project work. Documentation of

sites and recovery of data would increase and this would help retain cultural resources.

Visual quality.--Major shifts would occur in this alternative from management where activities are not visually evident to management where activities dominate the forest landscape (table 4.11). The major shifts would occur in California and to a lesser degree in the Pacific Northwest.

Table 4.11--Acres by Visual Condition Classes - Alternative 2

Class	Years	
	1986	2000
	(Million Acres)	
Preservation	57.18	47.77
Retention	37.55	30.91
Partial Retention	39.43	35.28
Modification	36.62	44.53
Maximum Modification	17.40	29.69

Biological

Timber productivity.--This alternative shows the second highest timber production of all alternatives through 2030 (table 4.12). Forest productivity would reach 98 percent of long-term sustained yield capacity in 2030.

Table 4.12--Timber Productivity Effect - Alternative 2

Effects	Unit	Years		
		1986	1990	2030
Lands Suitable for Timber Production	Mil Acres	71.1	71.1	71.1
Long-Term Sustained Yield Capacity	Bil BF	20.0	20.0	20.0
Timber Sale Volume (Offered)	Bil BF	13.6	15.0	19.7

Wildlife and fish.--Alternative 2 improves white-tailed deer habitat by approximately 10 percent in Regions 8 and 9. This improvement occurs as a result of the increased timber harvest which would provide a larger acreage in early successional vegetation. Habitat for other big game declines. This decline includes a 10 to 30 percent reduction in mule deer habitat productivity in Regions 3, 4, and 5; a 10 to 20 percent reduction for elk in Regions 1, 3, 4, and 6; and a 20 to 40 percent reduction for turkeys in Regions 3, 8, and 9. These adverse effects would be due to relatively high commodity activities such as timber harvesting, livestock grazing, and mining. These activities can reduce required cover, create excessive human disturbance from roads and mining, and reduce essential wildlife forage by increasing livestock use.

Fish habitat productivity would generally decline. Adverse impacts of 10 to 15 percent would occur for resident trout in all Regions. Although this alternative has relatively high capital investments for anadromous fish, the impacts from roads, timber harvesting, mining, and livestock grazing results in an overall reduction in habitat quality. Alaska would be an exception; there the capital investments more than offset the impacts of commodity activities.

Habitat for species dependent on standing dead trees (snags) and mature and old growth forest conditions will decline as a result of an harvest of old growth and more intensive timber management which includes shorter rotations. Habitat for species dependent on riparian vegetation, sagebrush, and grasslands will decline due to increased livestock grazing and an increase in projects to convert sagebrush to herbaceous vegetation.

The growth which many small rural communities may experience under this alternative may create additional stresses and impacts on fish and wildlife and the management of these resources because of population increases.

Alternative 3 - High Nonmarket

Economic

Table 4.13 shows the economic attributes of Alternative 3 at the national level. PNV-total is 105.3 billion dollars; PNV-market, 21.7 billion dollars; and PNV-receipts, 0.9 billion dollars. Actual Treasury receipts increase from 1.4 billion dollars in 1986 to about 3.2 billion dollars in 2030. A comparison of annual costs and benefits show that total benefits exceed costs by 135 percent in 1986, and by more than 400 percent by 2030. Annual costs are expected to exceed Treasury receipts by about 31 percent in 1986, but this is reversed by 2030 when receipts are expected to exceed annual costs by about 49 percent. Consumers' benefit increases from 2.9 billion dollars in 1986 to nearly 8.6 billion in 2030. Imports will decline by about 23 percent from 1990 to 2030 while average softwood lumber prices will increase by about 48 percent during the same period. Harvest of softwoods on private lands will increase about 60 percent by 2030 under this alternative.

At the Regional level, employment will increase moderately throughout the planning period (appendix K). The largest income and employment effects are likely to be in Regions 2, 3, 8, and 10 and would be generated more from recreation, wildlife and fish, and water use than in other Regions.

Table 4.13--Economic Effects - Alternative 3 - 1982 Dollars

Effects	Unit	Years		
		1986	1990	2030
Present Net Value (Total)	Bil $	105.3	--	--
Present Net Value (Market)	Bil $	21.7	--	--
Present Net Value (Receipts)	Bil $	0.9	--	--
Total Costs	Mil $	1855	2024	2162
Total Benefits	Mil $	4363	5086	11794
Returns to Treasury	Mil $	1420	1797	3224
Returns to States	Mil $	316	395	726
Consumers' Benefit	Mil $	2943	3289	8570
Softwood Lumber Imports	Mil BF	N/A	12594	9652
Softwood Harvest (priv. land)	Mil BF	33965	44990	54475

Social

Lifestyles.--Forest communities and urban visitors would have increasing opportunities for dispersed recreation and enjoyment of the forest amenities. Employment opportunities would increase, but the industry mix would change over time. Jobs in industries based on marketed resources would decline in some locations while positions in industries based on nonmarket resources and service industries would grow. These changes will affect occupational groups of local importance.

In the Mountains and Plains areas, employment opportunities in timber and wood-products industries would decline while employment opportunities in other sectors, including minerals, would grow. Effects on occupations related to timber and wood products would be more prominent than in other Regions.

Attitudes, beliefs, and values.--The needs of different interest groups would be affected. Enhanced environmental protection, increased opportunities for dispersed recreation, and an extensive wilderness network could result from this alternative. Persons whose livelihood or lifestyle depend on extracting or processing forest resources would be affected because opportunities to commercially harvest forest resources would be reduced.

Social organization.--The reduced employment in timber and other market resource activities in some locations would cause some emmigration and job switching under this alternative. This could lessen community stability, at least temporarily, and reduce earned incomes and revenues from National Forest lands. A possible increase in business activity relating to nonmarket resources could partially offset these losses. Immigration of those seeking recreation based on wilderness type lifestyles would be likely.

Population and land use.--The intensity of land use would decline. There would be a shift in areas receiving the most use as greater emphasis is placed on primitive and semiprimitive recreation and other nonmarket activities. Private land uses would increase slightly as a result of increased emphasis on recreation and reduced timber harvest on National Forests. These changes would not be significant at the national level.

Civil rights.--Effects are similar to Alternative 1.

Physical

Long-term soil productivity and water quality.--Nationally, the number of acres disturbed annually increases substantially between 1986 and 2000. Beneficial soil disturbing activities are 102 percent higher in the year 2000, while potentially adverse soil disturbance is up 8 percent. Long-term soil productivity and water quality show steady improvement. Region 10 does not reach national trends due to limited opportunities for beneficial activities such as range and watershed improvements. Region 2 improves its situation by 2030 due to a 60 percent reduction in acres disturbed for energy development. Region 8, while maintaining national trends shows some decline due to increased timber harvest and reduced emphasis on watershed improvement. Table 4.14 displays the soil disturbing activities for Alternative 3.

Table 4.14--Acres of Soil Disturbed - Alternative 3

Activities	Years	
	1986	2000
	(Thousand Acres)	
Beneficial		
Reforestation	73.8	78.7
Range Improvement	51.0	106.7
Wildlife Improvement	81.5	200.2
Watershed Improvement	7.6	47.3
TOTAL	213.9	432.9
Potentially Adverse		
Timber Harvest	166.5	164.9
Fuel Breaks	30.7	43.2
Minerals (Energy and Nonenergy)	98.2	108.6
Roads (Local, Arterial and Timber Purchaser)	25.5	30.5
TOTAL	320.9	347.2

Cultural resources.--Because fewer acres are disturbed in this alternative, there is a moderate increase in opportunities to stabilize and preserve significant properties. Concentration on amenity values would result in conducting cultural resource surveys in areas of suspected importance and of high site density. Increased protection of cultural sites would occur through increased law enforcement, barriers, and public awareness. Basically, shifts from strictly compliance activities (surveys) to more comprehensive management (evaluation, protection, and interpretation) occur.

Visual quality.--This alternative results in the least change in visual impacts (table 4.15). Generally, areas where management activities appear dominant will remain constant or decline and there will be a shift toward management activities that are visually subordinate. In Region 5, the shift toward management activities being evident would be reduced, but substantial evidence of management activities would still exist.

Table 4.15--Acres by Visual Condition Classes - Alternative 3

Class	Years	
	1986	2000
	(Million Acres)	
Preservation	57.18	52.93
Retention	37.55	38.05
Partial Retention	39.43	43.61
Modification	36.62	36.75
Maximum Modification	17.40	16.64

Biological

Timber productivity - Timber production would be at a moderate level in this alternative (table 4.16). Forest productivity would reach 80 percent of long-term sustained yield capacity by 2030.

Table 4.16--Timber Productivity Effects - Alternative 3

Effects	Unit	Years		
		1986	1990	2030
Lands Suitable for Timber Production	Mil Acres	54.0	54.3	54.3
Long-Term Sustained Yield Capacity	Bil BF	14.9	14.9	14.9
Timber Sale Volume (Offered)	Bil BF	10.4	10.5	12.0

Wildlife and fish.--Alternative 3 would generally benefit big game due to the high wildlife capital investments and commodity activities being closely balanced with wildlife objectives. An exception would be black-tailed deer habitat in Oregon and Washington which would decline 20 percent as a result of the reduced timber harvest and the related reduction of early successional vegetation. Improvements of 5 to 30 percent in habitat capability would occur for mule deer and elk in most Regions. Habitat for white-tailed deer and turkey would improve from 5 to 20 percent in most Regions.

Overall, fish habitat would improve under this alternative due to the high fisheries investments and the reduced levels of timber harvest, livestock grazing, and mining activity. An exception would be anadromous fish habitat in Region 1; in that Region, capital investments will offset most adverse effects, although a 5-percent reduction in habitat capability is still expected from timber, minerals, and range activities even though they are at reduced levels. Ten- to 15-percent improvements in resident trout and warm water fish habitat would occur in all Regions. Five- to 20-percent increases in anadromous fish habitat occur in all Regions.

Habitat for species dependent on standing dead trees and mature and overmature forest conditions would decline. However, this impact would be less than in those alternatives which significantly increase timber harvest. The losses of old growth habitat to timber harvest would be somewhat offset by the large wilderness allocation under this alternative. Habitat for species dependent upon riparian ecosystems improves as a result of reduced livestock grazing and an increase in wildlife, fisheries, and watershed capital investments to improve riparian habitats.

Alternative 3A - High Wilderness

Economic

Table 4.17 shows the economic attributes of Alternative 3A at the national level. PNV-total is 106.0 billion dollars; PNV-market, 21.5 billion dollars; and PNV-receipts, -2.5 billion dollars. Actual Treasury receipts increase from 1.4 billion dollars in 1986 to about 3.0 billion dollars in 2030. A comparison of annual costs and benefits show that total benefits exceed costs by 136 percent in 1986, and by more than 400 percent by 2030. Annual costs are expected to exceed Treasury receipts by about 30 percent in 1986, but this is reversed by 2030 when receipts are expected to exceed costs by about 40 percent. Consumers' benefit increases from 3.0 billion dollars in 1986 to about 8.8 billion billion in 2030. Imports will decline by about 23 percent from 1990 to 2030 while average softwood lumber prices will increase by about 48 percent during the same period. Harvest of softwoods on private lands will increase by about 60 percent by 2030 under this alternative.

Table 4.17--Economic Effects - Alternative 3A - 1982 Dollars

Effects	Unit	Years		
		1986	1990	2030
Present Net Value (Total)	Bil $	106.0	--	--
Present Net Value (Market)	Bil $	21.5	--	--
Present Net Value (Receipts)	Bil $	-2.5	--	--
Total Costs	Mil $	1852	2019	2160
Total Benefits	Mil $	4378	5104	11841
Returns to Treasury	Mil $	1415	1742	3024
Returns to States	Mil $	316	393	721
Consumers' Benefit	Mil $	2962	3362	8817
Softwood Lumber Imports	Mil BF	N/A	12594	9652
Softwood Harvest (priv. land)	Mil BF	33965	44990	54475

At the Regional level, employment levels increase moderately throughout the planning period (appendix K). The largest income and employment effects are likely to be in Regions 2, 3, 8, and 10 and would be generated more from recreation, wildlife and fish, and water use than in other Regions.

Social

Lifestyles.--Forest communities and urban visitors would have increasing opportunities for dispersed recreation and enjoyment of the forest amenities. Employment opportunities would increase, but the industry mix would change over time. Jobs in industries based on marketed resources would decline in some locations while positions in industries based on nonmarket resources and service industries would grow. These changes will affect occupational groups of local importance. In the Mountains and Plains areas, employment opportunities in timber and wood-products industries would decline while employment opportunities in other sectors, including minerals, would grow. Effects on occupations related to timber and wood products would be more prominent than in other regions.

Attitudes, beliefs, and values.--The needs of different interest groups would be affected. Enhanced environmental protection, increased opportunities for dispersed recreation, and an extensive wilderness network could result from this alternative. Persons whose livelihood or lifestyle depends on extracting or processing forest resources would be affected because opportunities to commercially harvest forest resources would be reduced.

Social organization.--The reduced employment in timber and other market resource activities in some locations would cause some emmigration and job switching under this alternative. This could lessen community stability, at least temporarily, and reduce earned incomes and revenues from National Forest lands. A possible increase in business activity relating to nonmarket resources could partially offset these losses.

Population and land use.--The intensity of land use would decline. There would be a shift in areas receiving the most use as greater emphasis is placed on primitive and semiprimitive recreation and other nonmarket activities. Private land uses would increase slightly as a result of increased emphasis on recreation and reduced timber harvest on National Forest System lands. These modest changes would not be significant at the national level.

Civil rights.--Effects are similar to Alternative 1.

Physical

Long-term soil productivity and water quality.--Nationally, the number of acres disturbed annually increases substantially between 1986 and 2000. Beneficial soil disturbing activities are 102 percent higher in the year 2000, while potentially adverse soil disturbance is up 8 percent. Long-term soil productivity and water quality show steady improvement. Region 10 does not reach national trends due to limited opportunities for beneficial activities such as range and watershed improvements. Region 2 improves its situation by 2030 due to a 60-percent reduction in acres disturbed for energy development. Region 8, while maintaining national trends shows some decline due to increased timber harvest and reduced emphasis on watershed improvement. Table 4.18 displays the soil disturbing activities for Alternative 3A.

Table 4.18--Acres of Soil Disturbed - Alternative 3A

Activities	Years	
	1986	2000
	(Thousand Acres)	
Beneficial		
Reforestation	73.8	78.3
Range Improvement	51.0	106.8
Wildlife Improvement	81.5	200.1
Watershed Improvement	7.6	47.3
TOTAL	213.9	432.5
Potentially Adverse		
Timber Harvest	166.5	164.1
Fuel Breaks	30.7	43.0
Minerals (Energy and Nonenergy)	98.2	108.6
Roads (Local, Arterial and Timber Purchaser)	25.5	30.4
TOTAL	320.9	346.1

Cultural resources.--Because fewer acres are disturbed in this alternative there is a moderate increase in opportunities to stabilize and preserve significant properties. Concentration on amenity values would result in conducting cultural resource surveys in areas of suspected importance and of high site density. Increased protection of cultural sites would occur through increased law enforcement, barriers, and public awareness. Basically, shifts from strictly compliance activities (surveys) to more comprehensive management (evaluation, protection, and interpretation) occur.

Visual quality.--This alternative results in the least change in visual impacts (table 4.19). Generally, areas where management activities appear dominant will remain constant or decline and there will be a shift toward management activities that are visually subordinate. In Region 5, the shift toward management activities being evident would be reduced, but would still be substantial.

Table 4.19--Acres by Visual Condition Classes - Alternative 3A

Class	Years	
	1986	2000
	(Million Acres)	
Preservation	57.18	52.93
Retention	37.55	38.05
Partial Retention	39.43	43.61
Modification	36.62	36.75
Maximum Modification	17.40	16.84

Biological

Timber productivity.--Timber production would be at a moderate level in this alternative (table 4.20). Forest productivity would reach 80 percent of long-term sustained yield capacity by 2030.

Table 4.20--Timber Productivity Effects - Alternative 3A

Effects	Unit	Years		
		1986	1990	2030
Lands Suitable for Timber Production	Mil Acres	54.3	54.3	54.3
Long-Term Sustained Yield Capacity	Bil BF	14.9	14.9	14.9
Timber Sale Volume (offered)	Bil BF	10.3	10.5	12.0

Wildlife and fish.--Alternative 3A would generally benefit big game due to the high wildlife capital investments and commodity activities being closely balanced with wildlife objectives. An exception would be black-tailed deer habitat in Oregon and Washington which would decline 20 percent as a result of the reduced timber harvest and the related reduction of early successional vegetation. Improvements of 5 to 30 percent in habitat capability would occur for mule deer and elk in most Regions. Habitat for white-tailed deer and turkey would improve from 5 to 20 percent in most Regions.

Overall, fish habitat would improve under this alternative due to the high fisheries investments and the reduced levels of timber harvest, livestock grazing, and mining activity. An exception would be anadromous fish habitat in Region 1; in that Region, the capital investments will offset most adverse effects, although a 5-percent reduction in habitat capability is still expected from timber, minerals, and range activities even though they are at reduced levels. Ten- to 15-percent improvements in resident trout and warm water fish habitat would occur in all Regions. Five- to 20-percent increases in anadromous fish habitat occur in all Regions.

Habitat for species dependent on standing dead trees and mature and overmature forest conditions would decline. However, this impact would be less than in those alternatives which significantly increase timber harvest. The losses of old growth habitat to timber harvest would be somewhat offset by the large wilderness allocation under this alternative. Habitat for species dependent upon riparian ecosystems improves as a result of reduced livestock grazing and an increase in wildlife, fisheries, and watershed capital investments to improve riparian habitats.

Alternative 4 - High All Resources

Economic

Table 4.21 shows the economic attributes of Alternative 4 at the national level. PNV-total is 98.7 billion dollars; PNV-market, 25.6 billion dollars; and PNV-receipts, -0.4 billion dollars. Actual Treasury receipts increase from 1.4 billion dollars in 1986 to 3.3 billion dollars in 2030. A comparison of annual costs and benefits show that benefits exceed costs by more than 120 percent in 1986, and by more than 350 percent in 2030. Annual costs are expected to exceed Treasury receipts by about 42 percent in 1986, but this will be reversed by 2030 when receipts are expected to exceed annual costs by about 39 percent. Consumers' benefit increases from about 3 billion dollars in 1986 to 7.7 billion in 2030. Imports will decline by about 24 percent from 1990 to 2030 while average softwood lumber prices will increase by more than 63 percent during the same period. Harvest of softwoods on private lands will increase about 57 percent by 2030 if Alternative 4 is implemented.

At the Regional level, employment will increase moderately throughout the planning period (appendix K). The largest relative income and employment increases are likely to be in Regions 2, 3, 8, 9, and 10.

Table 4.21--Economic Effects - Alternative 4 - 1982 Dollars

Effects	Unit	Years		
		1986	1990	2030
Present Net Value (Total)	Bil $	98.7	--	--
Present Net Value (Market)	Bil $	25.6	--	--
Present Net Value (Receipts)	Bil $	-0.4	--	--
Total Costs	Mil $	2016	2307	2409
Total Benefits	Mil $	4476	5273	11089
Returns to Treasury	Mil $	1422	2017	3347
Returns to States	Mil $	316	448	755
Consumers' Benefit	Mil $	3054	3256	7742
Softwood Lumber Imports	Mil BF	N/A	12531	9460
Softwood Harvest (priv. land)	Mil BF	33965	44990	53270

Social

Lifestyles.--This alternative places moderate to high emphasis on multiple resource development. Employment opportunities would be diversified and increase throughout the planning period. The traditional occupations and lifestyles of many forest communities would be slightly to moderately affected by the greater diversity of development activities. Wildlife enhancement activities should increase opportunities for dispersed recreation.

Attitudes, beliefs, and values.--This alternative would place equal emphasis on market and nonmarket resources. This would be consistent with both development and protection values.

Social organization.--This alternative would provide for a relatively high rate of development for such activities as timber harvest, mining, and recreation complexes which have large labor forces. Such increases would expand the economic base of neighboring communities, increase employment, and generate additional income for local and regional businesses. This contributes to community stability and well-being because most smaller U.S. communities have the facilities and surplus labor force to accommodate moderate increases in economic activity.

Population and land use.--The populations of forest-dependent communities would experience slight to moderate growth. Forest and adjacent land use intensity would increase slightly with effects most noticeable at the local level. Effects at the national level would not be significant.

Civil rights.--Increased employment opportunities would improve opportunities to hire minorities and women in many localities.

Physical

Long-term soil productivity and water quality.--Nationally, the number of acres disturbed annually increase substantially between 1986 and 2000. Beneficial soil disturbing activities are 50 percent greater in the year 2000, while potentially adverse soil disturbance is 41 percent higher. Long-term soil productivity and water quality trends remain relatively constant compared to 1986. Region 6 does not maintain national trends due to increased timber harvest and fuel treatment activities. Table 4.22 displays the soil disturbing activities for Alternative 4.

Table 4.22--Acres of Soil Disturbed - Alternative 4

Activities	Years 1986	Years 2000
Beneficial		
Reforestation	73.8	117.1
Range Improvement	51.0	183.6
Wildlife Improvement	81.5	186.1
Watershed Improvement	7.6	48.7
TOTAL	213.9	535.5
Potentially Adverse		
Timber Harvest	166.5	230.5
Fuel Breaks	30.7	65.0
Minerals (Energy and Nonenergy)	98.2	114.5
Roads (Local, Arterial and Timber Purchaser)	25.5	43.0
TOTAL	320.9	453.0

Cultural resources.--Funding and staffing would be increased to handle accelerated site evaluation, mitigation, protection, and interpretive activities. The potential for adverse effects on cultural resources would be high from this alternative because more sites would be impacted. More sites would be located, evaluated, and nominated to the National Register of Historic sites. More comprehensive cultural management would occur under this alternative.

Visual quality.-- Generally, land areas managed for activities that are not visually evident decline and the areas where activities are visually dominant increase (table 4.23). The exceptions are the Rocky Mountain and Eastern Regions, where management activities are less dominant in the forest landscape. In Regions 5 and 6 the shift from activities not being visually evident to activities dominating the landscape is strong. The shifts in this alternative are very similar to Alternative 1.

Table 4.23--Acres by Visual Condition Class - Alternative 4

Class	Years 1986	Years 2000
	(Million Acres)	
Preservation	57.18	50.49
Retention	37.55	32.85
Partial Retention	39.43	39.06
Modification	36.62	42.57
Maximum Modification	17.40	23.21

Biological

Timber productivity.--Timber production would be at a high level in this alternative. Forest productivity would reach 92 percent of long-term sustained yield capacity by 2030. Table 4.24 displays timber effects.

Table 4.24--Timber Productivity Effects - Alternative 4

Effects	Unit	Years 1986	Years 1990	Years 2030
Lands Suitable for Timber Production	Mil Acres	64.3	64.3	64.3
Long-Term Sustained Yield Capacity	Bil BF	19.0	19.0	19.0
Timber Sale Volume (Offered)	Bil BF	13.3	14.6	17.4

Wildlife and fish.--Alternative 4 would generally benefit the big game management indicator species. A 10-percent improvement in habitat would occur in Region 3 for mule deer; and in Regions 3, 8, and 9, habitat for white-tailed deer would improve by 10 to 20 percent. These increases result from expanded wildlife and fish capital investments. A 15-percent reduction in habitat quality would occur for elk in Region 6 because of increased timber harvest in eastern Oregon, which could reduce Rocky Mountain elk cover requirements. Turkey habitat would decline by 10 percent in Regions 8 and 9 as a result of removal of mature and overmature trees.

Fish habitat improves slightly as the expanded capital investments offset the adverse effects of commodity activities. An increase of 15 percent would occur for anadromous fish in Region 10. Anadromous fish habitat declines in Regions 1 and 4 by 5 percent because capital investments would not be sufficient to offset the negative effects of road construction in the Idaho batholith.

Habitat for species dependent on mature and overmature forest conditions would decline significantly due to the accelerated harvest of old growth timber stands and the shorter rotations in managing second growth stands. Habitat for species dependent on standing dead trees would decline as a result of accelerated timber harvest. Spotted owl habitat is expected to decline by 60 percent, habitat for pileated woodpeckers by 30 percent, and hairy woodpeckers by 20 percent. However, this impact would be mitigated somewhat by wildlife capital investments and the modest increase in the wilderness allocation acreage.

The population growth of small rural communities under this alternative can create additional stresses and impacts on fish and wildlife and the management of those resources. The ski area developments in Region 2 will create additional impacts on that Region's diminishing big game winter range acreage.

Alternative 5 - Reduced

Economic

Table 4.25 shows the economic attributes of Alternative 5 at the national level. PNV-total is 59.5 billion dollars; PNV-market, 24.8 billion dollars; and PNV-receipts, 11.4 billion dollars. Actual Treasury receipts increase from 1.4 billion dollars in 1986 to 2.7 billion dollars in 2030. A comparison of annual costs and benefits show that benefits exceed costs by 157 percent in 1986, and by more than 400 percent by 2030. Treasury receipts are expected to exceed annual costs by about two percent in 1986; by 2030, receipts are expected to exceed annual costs by about 110 percent. Consumers' benefit rises from about 2.1 billion dollars in 1986 to over 2.6 billion dollars in 2030. Softwood lumber imports will decline by about 18 percent from 1990 to 2030 while average softwood lumber prices will increase by more than 63 percent during the same period. Harvest of softwoods on private lands will increase about 83 percent by 2030 if Alternative 5 is implemented.

Alternative 5 will cause little change in resource-based industry employment and income over time. Manufacturing and service sectors exhibit only modest growth. Regions 2, 3, 8, and 10, show declines in resource based income and employment over time, but the effects in Region 6 are positive.

Table 4.25--Economic Effects - Alternative 5 - 1982 Dollars

Effects	Unit	Years		
		1986	1990	2030
Present Net Value (Total)	Bil $	59.5	--	--
Present Net Value (Market)	Bil $	24.8	--	--
Present Net Value (Receipts)	Bil $	11.4	--	--
Total Costs	Mil $	1376	1284	1260
Total Benefits	Mil $	3541	3556	5316
Returns to Treasury	Mil $	1400	1591	2679
Returns to States	Mil $	315	351	604
Consumers' Benefit	Mil $	2141	1965	2637
Softwood Lumber Imports	Mil BF	N/A	12666	11151
Softwood Harvest (priv. land)	Mil BF	33965	46230	55590

Social

Lifestyles.--Under this alternative, forest-related employment opportunities would increase marginally or decline. Developed recreation opportunities and amenity options would decline due to road closures and reduced maintenance, and the quality of developed recreation sites would deteriorate. Hunting and fishing opportunities may be greater than under market-emphasis alternatives because of less competition from other uses.

However, reduced agency funding under this alternative could adversely affect occupations and outdoor lifestyles of Forest-dependent communities and disappoint urban visitors.

Attitudes, beliefs, and values.--A sharply reduced budget alternative implies both reduced market resource outputs and less funding available for environmental protection and maintenance. This could mean fewer jobs and narrowed options for the use of both market and nonmarket National Forest resources because of decreased availability.

Social organization.--Reduced employment, lower market outputs, and declining revenues to local governments would adversely affect local communities, encouraging emmigration and placing a greater burden on public social services. This would weaken rural community cohesiveness and stability.

Population and land use.--The lower level of economic activity would result in some immigration from rural to urban areas. Forest and adjacent land use intensity may decline, but the reduction of forest activities and compliance monitoring would lead to the deterioration of facilities and reduce opportunities for use.

Civil rights.--The reduced budget would curtail the agency work force. This would reduce the effectiveness of equal opportunity efforts designed to place women and minorities in new or vacated positions. There would also be fewer contracts to minority-owned businesses and other firms that employ minorities and women.

Budget cuts would hamper efforts to adapt recreation sites for use by the elderly and handicapped. Reduced funding for State and Private Forestry activities would decrease assistance to minority landowners.

Physical

Long-term soil productivity and water quality.--Nationally, the number of acres disturbed annually decreases substantially between 1986 and 2000. Beneficial soil disturbing activities are 19 percent less in the year 2000, while potentially adverse soil disturbance is 56 percent less. Long-term soil productivity and water quality trends will be below 1986 due to this reduction in activities. This is the only alternative that will result in effects that are substantially below current. Region 2 deviates from this trend in future years (2000 and 2030) due to a dramatic decline in energy development activities. Region 6 also varies from the downward trend due to a reduction in timber harvesting. Table 4.26 displays the soil disturbing activities for Alternative 5.

Table 4.26--Acres of Soil Disturbed - Alternative 5

Activities	Years	
	1986	2000
	(Thousand Acres)	
Beneficial		
Reforestation	73.8	51.6
Range Improvement	51.0	50.8
Wildlife Improvement	81.5	63.9
Watershed Improvement	7.6	7.9
TOTAL	213.9	174.2
Potentially Adverse		
Timber Harvest	166.5	111.7
Fuel Breaks	30.7	30.6
Minerals (Energy and Nonenergy)	98.2	80.8
Roads (Local, Arterial and Timber Purchaser)	25.5	18.3
TOTAL	320.9	241.4

Cultural resources.--Compliance surveys on ground disturbing activities would be reduced. Site vandalism and natural deterioration may increase as a result of decreased opportunities to inspect the resources and a limited budget to do stabilization work. Management options will be extremely limited. Significant cultural resources will gradually be lost.

Visual quality.--Alternative 5 generally is very similar to the way the landscape is managed today, with most Regions shifting very little (table 4.27). The largest shifts occur in Regions 2, 5, and 6.

Table 4.27--Acres by Visual Condition Classes - Alternative 5

Class	Years	
	1986	2000
	(Million Acres)	
Preservation	57.18	52.24
Retention	37.55	35.44
Partial Retention	39.43	41.84
Modification	36.62	37.15
Maximum Modification	17.40	21.51

Biological

Timber productivity.--Timber sales are at the lowest level in this alternative. Forest productivity reaches 60 percent of long-term sustained yield capacity in year 2030 (table 4.28).

Table 4.28--Timber Productivity Effects - Alternative 5

Effects	Unit	Years		
		1986	1990	2030
Lands Suitable for Timber Production	Mil Acres	50.4	50.4	50.4
Long-Term Sustained Yield Capacity	Bil BF	13.4	13.4	13.4
Timber Sale Volume (Offered)	Bil BF	8.7	8.7	8.1

Wildlife and fish.--Alternative 5 would generally be adverse to the big game management indicator species due to the reduced timber harvest which provides early successional vegetation and reduced wildlife capital investments. The most significant declines would be 10 percent for mule deer in Region 3; 10 to 15 percent for elk in Regions 1, 3, 4; 20 percent for black-tailed deer in Region 6; and 10 to 15 percent for white-tail deer in Regions 1, 3, 8, and 9. In Region 6, this alternative would maintain the existing quality of elk habitat because the reduced timber harvest would maintain required cover and there will be less road construction and associated disturbance.

This alternative would generally be adverse to fish habitat due to reduced levels of coordination with commodity activities and the reduction in capital investments specifically for fisheries. Reductions of 10 to 20 percent would occur in anadromous fish habitat in Regions 1, 4, 5, 9, and 10, warm-water fish habitat in Regions 3, and 9, and resident trout habitat in Regions 1, 3, 4, 5, and 9.

Habitat for species dependent on mature and overmature forest conditions and standing dead trees would decline as a result of the harvest of old growth stands. However, this alternative provides the lowest impact to this species group since it allocates the lowest acreage to timber harvest.

Generally, habitat for species dependent on grassland communities and riparian habitat would decline as a result of reduced levels of coordination with commodity activities and reduced wildlife capital investments. Habitat for species dependent upon sagebrush communities would increase as sagebrush invades and re-occupies areas presently dominated by herbaceous vegetation.

Alternative 6 - Implement Plans

Economic

Table 4.29 shows the economic attributes of Alternative 6 at the national level. PNV-total is 95.0 billion dollars; PNV-market, 26.5 billion dollars; and PNV-receipts, 1.7 billion dollars. Actual Treasury receipts increase from 1.4 billion dollars in 1986 to nearly 3.6 billion dollars by 2030. A comparison of annual costs and benefits show that annual benefits exceed costs by more than 120 percent in 1986, and this increases to nearly 375 percent by 2030. Annual costs are expected to exceed Treasury receipts by about 38 percent by 1986, but this is reversed by 2030 when receipts are expected to exceed annual costs by about 54 percent. Consumers' benefit increases from 2.9 billion dollars in 1986 to 7.4 billion in 2030. Softwood lumber imports will decline by about 23 percent from 1990 to 2030 while

average softwood lumber prices will increase by about 40 percent during the same period. Harvest of softwoods on private lands will increase about 56 percent by 2030 if Alternative 6 is implemented.

At the Regional level, employment will increase significantly throughout the planning period (appendix K). The largest income and employment effects are likely to be in Regions 2, 3, 8, 9 and 10.

Table 4.29--Economic Effects - Alternative 6 - 1982 Dollars

Effects	Unit	Years 1986	1990	2030
Present Net Value (Total)	Bil $	95.0	--	--
Present Net Value (Market)	Bil $	26.5	--	--
Present Net Value (Receipts)	Bil $	1.7	--	--
Total Costs	Mil $	1966	2203	2323
Total Benefits	Mil $	4346	4888	11012
Returns to Treasury	Mil $	1424	1963	3569
Returns to States	Mil $	316	436	812
Consumers' Benefit	Mil $	2922	2925	7443
Softwood Lumber Imports	Mil BF	N/A	12542	9663
Softwood Harvest (priv. land)	Mil BF	33965	44345	52915

Social

Effects will be similar to Alternative 2.

Physical

Long-term soil productivity and water quality.--Nationally, the number of acres disturbed annually increases substantially between 1986 and 2000. Beneficial soil disturbing activities are 111 percent greater in the year 2000, while potentially adverse soil disturbance increases by 28 percent. Long-term soil productivity and water quality show an increasing trend. Regions 5 and 8 have reduced emphasis on nonstructural range improvement and nonstructural wildlife improvement, respectively. Region 6 has a slight increase in activities that are beneficial. Table 4.30 displays the soil disturbing activities for Alternative 6.

Table 4.30--Acres of Soil Disturbed - Alternative 6

Activities	Years 1986	2000
	(Thousand Acres)	
Beneficial		
Reforestation	73.8	101.1
Range Improvement	51.0	138.0
Wildlife Improvement	81.5	165.9
Watershed Improvement	7.6	45.7
TOTAL	213.9	450.7
Potentially Adverse		
Timber Harvest	166.5	207.4
Fuel Breaks	30.7	55.5
Minerals (Energy and Nonenergy)	98.2	111.9
Roads (Local, Arterial and Timber Purchaser)	25.5	37.3
TOTAL	320.9	412.1

Cultural resources.--This alternative would have some positive changes over the existing program but the overall effects will be minimal. All known or newly discovered sites will be either protected or adverse effects mitigated. Surveys outside of project areas would proceed at a rate to allow completion on each Forest by 2030. A greater emphasis would be placed on mitigation.

Visual quality.--Generally, landscapes in this alternative shift from activities not visually evident to activities being visually dominant (table 4.31). The largest shift occurs in Region 5.

Table 4.31--Acres by Visual Condition Classes - Alternative 6

Class	Years	
	1986	2000
	(Million Acres)	
Preservation	57.18	49.79
Retention	37.55	35.96
Partial Retention	39.43	40.84
Modification	36.62	39.16
Maximum Modification	17.40	22.43

Biological

Timber productivity.--Forest productivity in this alternative would achieve 89 percent of long-term sustained yield capacity by 2030 (table 4.32).

Table 4.32--Timber Productivity Effects - Alternative 6

Effects	Unit	Years		
		1986	1990	2030
Lands Suitable for Timber Production	Mil Acres	61.3	61.3	61.3
Long-Term Sustained Yield Capacity	Bil BF	17.5	17.5	17.5
Timber Sale Volume (Offered)	Bil BF	11.9	12.8	15.5

Wildlife and fish.--Generally, Alternative 6 would be favorable for the major big game management indicator species due to the combined wildlife capital investments and the commodity activities being more closely aligned with wildlife objectives. Significant increases in habitat would occur for mule deer in Regions 1, 2, 3, and 4; white-tailed deer in Regions 1, 2, 3, 8, and 9; wild turkey in Region 9; black-tailed deer in Region 6, and elk in Regions 1, 3, and 4. These increases in habitat capability range from 10 to 25 percent. Under this alternative habitat for turkey would decline by 10 percent in Region 8 as a result of more intensive timber harvesting. Elk habitat would decline in Region 6 by 10 percent.

Habitat for fish would generally improve. Increases of 10 percent would occur in Region 3 for resident trout and warm-water fish; and in Regions 4, 5, 6, and 10 for anadromous fish. Resident trout habitat in Regions 8 and 9 would be adversely impacted by 5 to 10 percent as a result of capital investments being insufficient to offset the impacts from the commodity activities.

Habitat for species dependent upon mature and old growth forest stands would decline significantly from accelerated timber harvesting. Species dependent on standing dead trees would also decline due to more intensive timber management and old growth timber removal. However, this would be mitigated somewhat by increases in wildlife capital investments. Habitat for species dependent upon riparian habitats and grasslands will generally improve due to the more intensive integrated resource management.

Alternative 6 could result in significant population growth in rural communities which would create additional stress and impacts on fish and wildlife and the management of those resources.

Alternative 7 - High Present Net Value

Economic

Table 4.33 shows the economic attributes of Alternative 7 at the national level. PNV-total is 106.8 billion dollars; PNV-market, 29.4 billion dollars; and PNV-receipts, 4.0 billion dollars. Actual Treasury receipts increase from 1.4 billion dollars in 1986 to 3.5 billion dollars in 2030. A comparison of annual costs and benefits show that benefits exceed costs by about 135 percent in 1986, and this increases to 437 percent by 2030. Annual costs exceed Treasury receipts by more than 33 percent in 1986, but this is reversed by 2030 when receipts exceed costs by nearly 62 percent.

Consumer's benefit increases from 3.1 billion dollars in 1986 to 8.2 billion dollars in 2030. Softwood lumber imports will decline by about 25 percent from 1990 to 2030 while average softwood lumber prices will increase by more than 50 percent during the same period. Harvest of softwood on private lands will increase by about 50 percent by 2030.

At the Regional level, employment will increase moderately throughout the planning period (appendix K). The largest income and employment effects are likely to be in Regions 2, 3, and 8.

Table 4.33--Economic Effects - Alternative 7 - 1982 Dollars

Effects	Unit	Years		
		1986	1990	2030
Present Net Value (Total)	Bil $	106.8	--	--
Present Net Value (Market)	Bil $	29.4	--	--
Present Net Value (Receipts)	Bil $	4.0	--	--
Total Costs	Mil $	1908	2095	2177
Total Benefits	Mil $	4486	5247	11692
Returns to Treasury	Mil $	1425	1958	3532
Returns to States	Mil $	316	433	796
Consumers' Benefit	Mil $	3061	3289	8160
Softwood Lumber Imports	Mil BF	N/A	12594	8854
Softwood Harvest (priv. land)	Mil BF	33965	44455	54905

Social

Effects will be similar to Alternative 2.

Physical

Long-term soil productivity and water quality.--Nationally, the number of acres disturbed annually increases between 1986 and 2000. Beneficial soil disturbing activities are 99 percent greater in the year 2000, while potentially adverse soil disturbance increases by 28 percent. Long-term soil productivity and water quality show an increasing trend. Region 3 shows the greatest difference among Regions in effects. Its downward trend is due to a significant decrease in nonstructural range improvement and watershed condition improvement activities. Table 4.34 displays the soil disturbing activities for Alternative 7.

Table 4.34--Acres of Soil Disturbed - Alternative 7

Activities	Years	
	1986	2000
	(Thousand Acres)	
Beneficial		
Reforestation	73.8	97.4
Range Improvement	51.0	128.3
Wildlife Improvement	81.5	169.3
Watershed Improvement	7.6	30.7
TOTAL	213.9	425.7
Potentially Adverse		
Timber Harvest	166.5	201.7
Fuel Breaks	30.7	56.4
Minerals (Energy and Nonenergy)	98.2	118.0
Roads (Local, Arterial and Timber Purchaser)	25.5	36.2
TOTAL	320.9	412.3

Cultural resources.--Impacts are similar to Alternative 2.

Visual quality.--Generally, activities not visually evident diminish and visually dominant activities increase (table 4.35). The exception is Region 2 where visually dominant activities decline because of increased timber harvest over the next 10 to 15 years. The largest shift from activities not visually evident to activities being dominant occurs in Region 5.

Table 4.35--Acres by Visual Condition Classes - Alternative 7

Class	Years	
	1986	2000
	(Million Acres)	
Preservation	57.18	49.94
Retention	37.55	32.29
Partial Retention	39.43	37.32
Modification	36.62	42.46
Maximum Modification	17.40	26.17

Biological

Timber Productivity.--Forest productivity would reach 81 percent of long-term sustained yield capacity by 2030. Timber sale volume is relatively high in the early years and increases to 2030 (table 4.36).

Table 4.36--Timber Productivity Effects - Alternative 7

Effects	Unit	Years		
		1986	1990	2030
Lands Suitable for Timber Production	Mil Acres	59.8	59.8	59.8
Long-Term Sustained Yield Capacity	Bil BF	18.0	18.0	18.0
Timber Sale Volume (Offered)	Bil BF	12.2	12.9	14.6

Wildlife and fish.--This alternative would generally improve the habitat for big game management indicator species. Increases of 10 to 20 percent would occur for mule deer habitat in Regions 1, 2, and 3; elk habitat in Region 3; white-tailed deer habitat in Regions 3, 8, and 9; black-tailed deer habitat in Region 6; and wild turkey in Region 9. A 10-percent decline would occur in Region 8 for turkey as a result of the more intensive timber management activities, and a similar decline would occur in Region 6 for elk. The reduction for elk in Region 6 is the result of a sharp increase in timber harvest in eastern Oregon and Washington which would affect cover requirements.

Fish habitat would generally improve with the most significant being a 10-percent increase for resident trout in Region 3, a 10- to 15-percent increase for anadromous fish in Regions 5 and 10, and a 10-percent increase for warm-water fish in Region 3. Resident trout habitat in Region 8 and anadromous fish habitat in Region 1 would decline by 10 and 25 percent, respectively, as a result of the impacts from commodity activities.

Habitat for species dependent upon old growth forest stands would decline as well as habitat for species dependent upon standing dead trees. This impact will be offset somewhat through wildlife capital investments. The most significant impacts would be a 55-percent reduction in spotted owl habitat and a 25-percent reduction in pileated woodpecker habitat. Riparian habitats would improve through more intensive coordinated management and increased capital investments. Grassland habitats should remain in similar condition while sagebrush habitat would decline as a result of increased projects to convert sagebrush to herbaceous vegetation.

Ski area developments in Region 2 would increase placing additional impacts on that Region's diminishing big game winter range acreage. Population growth in rural communities can be expected, placing stresses and impacts on fish and wildlife on adjacent National Forests.

Alternative 8 - 1980 RPA

Economic

Table 4.37 shows the economic attributes of Alternative 8 at the national level. PNV-total is 94.7 billion dollars; PNV-market, 25.9 billion dollars; and PNV-receipts, 1.2 billion dollars. Actual

Treasury receipts increase from 1.4 billion dollars in 1986 to 3.6 billion dollars in 2030. A comparison of annual costs and benefits show that total benefits exceed costs by more than 100 percent in 1986, and this increases to more than 350 percent by 2030. Annual costs will exceed Treasury receipts by about 39 percent in 1986, but this is reversed by 2030 when receipts are expected to exceed annual costs by about 54 percent. Consumers' benefit increases from 2.9 billion dollars in 1986 to 7.2 billion in 2030. Softwood lumber imports will decline by more than 25 percent from 1990 to 2030 while average softwood lumber prices will increase by more than 43 percent during the same period. Harvest of softwoods on private lands will increase about 57 percent by 2030 if Alternative 8 is implemented on NFS lands.

At the Regional level, employment will increase moderately throughout the planning period (appendix K). The largest income and employment effects are likely to be in Regions 2, 3, 8, and 10.

Table 4.37--Economic Effects - Alternative 8 - 1982 Dollars

Effects	Unit	Years		
		1986	1990	2030
Present Net Value (Total)	Bil $	94.7	--	--
Present Net Value (Market)	Bil $	25.9	--	--
Present Net Value (Receipts)	Bil $	1.2	--	--
Total Costs	Mil $	1987	2208	2324
Total Benefits	Mil $	4376	4862	10765
Returns to Treasury	Mil $	1425	1990	3594
Returns to States	Mil $	316	442	813
Consumers' Benefit	Mil $	2952	2872	7171
Softwood Lumber Imports	Mil BF	N/A	12516	9316
Softwood Harvest (priv. land)	Mil BF	33965	44380	53420

Social

Impacts will be similar to Alternative 2, however, changes would be more gradual.

Physical

Long-term soil productivity and water quality.--Nationally, the number of acres disturbed annually increases substantially between 1986 and 2000. Beneficial soil disturbing activities are 128-percent greater in the year 2000, while potentially adverse soil distrubance increases by 29 percent. Long-term soil productivity and water quality show an increasing trend. Regions 5 and 8 have reduced emphasis on nonstructural range improvement and nonstructural wildlife improvement, respectively. Table.4.38 displays the soil disturbing activities for Alternative 8.

Table 4.38--Acres of Soil Disturbed - Alternative 8

Activities	Years	
	1986	2000
	(Thousand Acres)	
Beneficial		
Reforestation	73.8	102.2
Range Improvement	51.0	173.4
Wildlife Improvement	81.5	166.4
Watershed Improvement	7.6	46.3
TOTAL	213.9	488.3
Potentially Adverse		
Timber Harvest	166.5	204.7
Fuel Breaks	30.7	56.9
Minerals (Energy and Nonenergy)	98.2	114.5
Roads (Local, Arterial and Timber Purchaser)	25.5	37.2
TOTAL	320.9	413.3

Cultural resources.--The potential for adverse effects on cultural resources would be high from this alternative. A greater emphasis will be placed on mitigation with data recovery, documentation, and collection activities having significant increases. High commodity production goals will cause increased site mitigation activities and high mitigation costs.

Visual quality.--Generally, visual conditions shift from activities not visually evident to activities being visually evident (table 4.39), with Regional variations being less evident than with other alternatives.

Table 4.39--Acres by Visual Condition Classes - Alternative 8

Class	Years	
	1986	2000
	(Million Acres)	
Preservation	57.18	49.30
Retention	37.55	33.75
Partial Retention	39.43	39.15
Modification	36.62	42.46
Maximum Modification	17.40	23.52

Biological

Timber productivity.--This alternative would achieve 86 percent of long-term sustained yield capacity by 2030 (table 4.40).

Table 4.40--Timber Productivity Effects - Alternative 8

Effects	Unit	Years		
		1986	1990	2030
Lands Suitable for Timber Production	Mil Acres	61.1	61.1	61.1
Long-Term Sustained Yield Capacity	Bil BF	18.0	18.0	18.0
Timber Sale Volume (Offered)	Bil BF	12.4	13.1	15.4

Wildlife and fish.--This alternative would generally improve habitat for big game management indicator species. Increases of 10 to 20 percent would occur for mule deer in Regions 2, 3, and 6; for elk in Regions 1, 3, and 4; for white-tailed deer in Regions 3, 8, and 9; for black-tailed deer in Region 6; and for wild turkey in Region 9. These increases would primarily result from increases in capital investments to improve wildlife habitat and from improved coordination with commodity activities. Adverse effects would occur in Region 6 with a 15-percent decline in elk habitat, and in Region 8 with a 10-percent decline in turkey habitat. The decline in elk habitat in Region 6 is due to a shift in timber outputs to the National Forests east of the Cascades. The impacts to turkey habitat in Region 8 are due to more intensive timber management which can shorten rotations, resulting in a reduction in the acreage of mature hardwood stands which are important for mast and roosting sites.

Fish habitat will generally improve. The most significant improvements are increases of 10 percent in Region 3 for resident trout; 10 to 15 percent in Regions 4, 5, and 10 for anadromous fish; and 10 percent in Region 3 for warm-water fish. These increases would occur as a result of increased fisheries capital investments. Resident trout habitat would decline 10 percent in Region 8 and decline 5 percent in Region 6. Region 1 would experience a 5-percent decline in anadromous fish habitat.

Habitat for species dependent upon old growth forest stands would decline up to 50 percent. Habitat for species dependent upon standing dead trees would also decline, but this impact will be offset by increased wildlife capital investments. Riparian habitat should improve through more intensive coordinated management and increased capital investments. Grassland habitat would maintain its current condition while sagebrush habitat will decline somewhat due to increased projects to convert sagebrush to herbaceous vegetation.

The increase in ski area developments in Region 2 will further impact the limited big game winter range in Colorado. Population growth in rural communities can be expected and this would place additional stresses and impacts on fish and wildlife and the management of those resources.

Alternative 9 - High Productivity

Economic

Table 4.41 shows the economic attributes of Alternative 9 at the national level. PNV-total is 100.6 billion dollars; PNV-market, 23.8 billion dollars; and PNV-receipts, -5.9 billion dollars. Actual Treasury receipts increase from 1.4 billion dollars in 1986 to 3.4 billion dollars in 2030. A comparison of annual costs and benefits shows that total benefits exceed costs by 120 percent in 1986, and this increases to more than 340 percent by 2030. Annual costs are expected to exceed Treasury receipts by about 43 percent in 1986, but this is reversed by 2030 when receipts are expected to exceed annual costs by about 25 percent. Consumers' benefit increases from 3.1 billion dollars in 1986 to 8.6 billion in 2030. Softwood lumber imports will decline by 48 percent from 1990 to 2030, while average softwood lumber prices will increase by about 32 percent during the same period. Harvest of softwoods on private lands will increase about 53 percent by 2030.

At the Regional level, employment will increase significantly throughout the planning period (appendix K), especially in Regions 2, 3, 8, 9, and 10.

Table 4.41--Economic Effects - Alternative 9

Effects	Unit	Years		
		1986	1990	2030
Present Net Value (Total)	Bil $	100.6	--	--
Present Net Value (Market)	Bil $	23.8	--	--
Present Net Value (Receipts)	Bil $	-5.9	--	--
Total Costs	Mil $	2035	2357	2694
Total Benefits	Mil $	4495	5302	11930
Returns to Treasury	Mil $	1422	2006	3378
Returns to States	Mil $	316	447	771
Consumers' Benefit	Mil $	3074	3296	8552
Softwood Lumber Imports	Mil BF	N/A	12311	6444
Softwood Harvest (priv. land)	Mil BF	33965	42265	52050

Lifestyles.--The highest levels of market-oriented employment and local business activity are expected under this alternative. Timber production is high and increased roading would encourage minerals exploration and development, hunting, and motorized recreation. Additional payrolls would encourage immigration of workers and their families whose lifestyles may differ from those of older residents. Changes would be especially evident in rural sections of major timber, energy, and minerals producing areas. Increased traffic, trespass, noise, dust, and litter would impact traditional lifestyles of ranchers, ethnic communities, small town residents, and rural retirees.

Attitudes, beliefs, and values.--This alternative is consistent with the values of people who desire increased local employment, expanded domestic production of raw materials, increased access to roadless areas, and additional sources of fuelwood. Other people will be concerned about the rate and duration of resource development permitted under this alternative, and the adverse environmental effects that could result. The combined industrial activities possible under this alternative could displace existing recreation patterns, reduce scenic values, increase pollution, be perceived as resource depleting, and generate growing public opposition.

Social organization.--The economic base of many forest-dependent communities would expand. Where growth is gradual and consistent with local needs, earned income, tax revenues, and economic stability may be increased. New or expanded industries usually hire additional employees, contract for services, and make some local purchases. Incoming workers and their families increase local business activity.

Rapid and extended growth may quickly exceed the local capacity to provide housing, schools, utilities, and other community services. Considerable time is required to plan, finance, construct, and staff additional facilities. This may result in hardship for both new and established residents. Many of the adverse effects of rapid growth can be mitigated by planning and careful scheduling to avoid the accumulative effects of numerous labor intensive activities.

Population and land use.--Existing land use activities such as dispersed recreation, wildlife habitat, or ranching may be affected by industrial activities and related community expansion. More intensive use of National Forest lands often results in increased use of adjacent lands, where a greater variety of uses is possible.

Civil rights.--Expanded employment under this alternative would provide more opportunities to employ women and minorities. Increased population in the area could undermine efforts of Native Americans and other minorities to preserve a traditional way of life and to protect and visit sacred places.

Physical

Long-term soil productivity and water quality.--Nationally, the number of acres disturbed annually increases substantially between 1986 and 2000. Beneficial soil disturbing activities are 147 percent greater in the year 2000, while potentially adverse soil disturbance increases by 65 percent. Long-term soil productivity and water quality show an increasing trend over time. This alternative has the highest level of increased soil disturbing activities both beneficial and potentially adverse. Table 4.42 displays the soil disturbing activities for Alternative 9.

Table 4.42--Acres of Soil Disturbed - Alternative 9

Activities	Years	
	1986	2000
	(Thousand Acres)	
Beneficial		
Reforestation	73.8	156.0
Range Improvement	51.0	174.0
Wildlife Improvement	81.5	154.1
Watershed Improvement	7.6	43.1
TOTAL	213.9	527.2
Potentially Adverse		
Timber Harvest	166.5	287.9
Fuel Breaks	30.7	79.3
Minerals (Energy and Nonenergy)	98.2	118.3
Roads (Local, Arterial and Timber Purchaser)	25.5	44.2
TOTAL	320.9	529.7

Cultural resources.--The potential for adverse effects on cultural resources greatly increases with this alternative. Increased costs of inventory and data recovery would occur so that cultural values could be retained. Acceleration of inventory would be necessary through 1995. Increased documentation of cultural properties would be required. Management of cultural properties by avoidance would not be possible in this intensive forest management alternative. The advantageous effects to cultural resource management are the increased activity and funding which could lead to a more rapid inventory of culturally significant areas and evaluation of these sites.

Visual quality.--In several of the western National Forests, visual quality would be significantly reduced under this alternative. For example, Region 5 would have 75 percent of its total acres in the modification and maximum modification visual condition classes. In addition, Region 6 would have nearly 50 percent of its acres in these categories. The forest environment in general would take on more of a tree farm appearance with less emphasis on natural appearing landscapes. Fewer visual quality objectives would be met outside of Congressionally classified areas. In many cases, even standards for maximum modification (dominant management activities, but appear natural when seen as background) cannot be met. Mature or old growth forests would be replaced by extensive clearcutting along major highways, areas adjacent to National Parks and Monuments, Wilderness, and National Recreation Areas before the year 2030. In the East, the impact would be less due to accelerated growth and flatter terrain, however, the number of acres disturbed annually would increase above all other alternatives. Region 9 would have close to 65 percent of its acres in the modification and maximum modification visual condition classes. The size of clearcuts would increase to 200 acres in some instances in softwoods, and 100 acres in hardwoods. See table 4.43 for acreage by visual condition class.

Table 4.43--Acres by Visual Condition Classes - Alternative 9

Class	Years	
	1986	2000
	(Million Acres)	
Preservation	57.18	40.38
Retention	37.55	22.58
Partial Retention	39.43	27.98
Modification	36.62	43.76
Maximum Modification	17.40	53.68

Biological

Timber productivity.--This alternative has the highest timber production through 2030, and forest productivity would reach 77 percent of long-term sustained yield capacity in 2030.

Table 4.44--Timber Productivity Effects - Alternative 9

Effects	Unit	Years		
		1986	1990	2030
Lands Suitable for Timber Production	Mil Acres	79.0	79.0	79.0
Long-Term Sustained Yield Capacity	Bil BF	28.3	28.3	28.3
Timber Sale Volume (Offered)	Bil BF	13.6	15.9	21.8

Wildlife and fish.--While habitat for white-tailed deer would improve by 10 percent on the eastern National Forests as a result of increased acreage in early successional vegetation, Alternative 9 would generally have an adverse affect fish and wildlife habitat quality. Mule deer and elk habitat quality would decline by 10 to 30 percent as a result of increased human disturbance from roads and a loss of thermal and hiding cover from accelerated timber harvest. Wild turkey habitat quality would decline by 40 to 50 percent due to the loss of mature and overmature forest stands which provide mast and roosting sites.

Habitat for resident trout and anadromous fish would decline from 10 to 65 percent in all Regions with the exception of Region 10. These impacts would result from increased timber harvest, road construction, and livestock grazing which would significantly increase the risk of landslides, and increase stream sediment and stream temperatures.

Management objectives for recovery of threatened and endangered species would be met, but not according to the management schedule for the year 2000. Species dependent upon mature and old growth forest stands and standing dead trees would be reduced because of the high level of timber harvest. Spotted owl habitat would decline by 75 percent and pileated woodpecker habitat by 40 percent. The distribution of wildlife would be disrupted causing isolated populations and threatening the continued existence of those populations. This would eventually result in the more sensitive fish and wildlife species being Federally listed as endangered and threatened.

These impacts on fish and wildlife habitat and populations will challenge agency relations with State Fish and Wildlife agencies. Traditional hunting and fishing pursuits may also be altered. For example, hunting seasons in many western States, which have consisted of relatively long, liberal seasons in a back-country setting, would require more stringent regulations. Similarly, long established traditions such as squirrel hunting in the southeast, would be impaired by the reduction of mature hardwood stands.

Unavoidable Adverse Effects

Development and use of natural resources will cause certain unavoidable adverse effects such as increased soil loss; declining water, air, and scenic quality; and disturbance or loss of some kinds of wildlife and fish habitat. These disturbances are usually restricted and local in extent. The type, intensity, and duration is dependent on the implementation of a particular alternative and on the mitigation measures that are taken to protect these resources.

All adverse effects are estimated to be within acceptable legal and management limits. Usually they occur only in the short term; 2 years or less. Mitigation measures are developed for all adverse effects and are described in environmental analysis reports prepared for specific activities, such as road construction, timber harvest, prescribed burning, and mineral exploration.

Irreversible and Irretrievable Commitment of Resources

This summary is based on the 50-year planning period. Possibly, through time, some resource commitments may not remain irreversible or irretrievable. Geographic location influences these judgments. For example, major road construction in the arid Southwest is for practical purposes an irreversible commitment. These roads, even though closed and stabilized, remain visible for many decades. This also is applicable to most roads in alpine areas. In contrast, roads constructed on lands in the Southeast and Northwest may no longer be visible in 50 years. Some examples of irreversible commitments of resources are: open pit mining; extraction of nonrenewable resources, such as minerals, oil and gas; road and trail construction in certain areas; large dams and reservoirs; and damaged cultural resources.

Resources such as timber, wildlife and fish habitat, recreation opportunities, and livestock forage which are lost to road construction, insect and disease damage, and fire damage are considered to be irretrievable. In addition, certain types of recreation use suffer from irretrievable losses. For example, primitive and semiprimitive use is lost when land areas are developed. On the other hand, developed recreation use is lost when campgrounds and picnic site structures are closed or not maintained to standard service levels.

Implementing planning standards and guidelines developed for the National Forest land and resource management plans and Regional Guides protects against these kinds of resource commitments and minimizes their significance.

Relationship between Short-Term Use and Long-Term Productivity

Short-term uses refer to resource uses that occur annually on some part of the National Forests or on State and private lands. Some examples are livestock grazing, timber harvest, and recreation use. Long-term productivity refers to the capability of the land to provide resources; for example, forage for livestock, trees for timber, and habitat suitable for wildlife.

The Multiple-Use Sustained Yield Act of 1960 states that the agency is to manage the National Forest System for "achievement and maintenance in perpetuity...various renewable resources...without impairment of the productivity of the land". Thus, the purposes of planning, implementation, and monitoring are to assure that long-term productivity is maintained. Each alternative considered in detail is designed to protect long-term productivity. In actual practice this is determined by monitoring Forest plans. Adjustments in planning direction may be required following analysis and evaluation of actions.

Possible Conflicts Between Alternatives and Other Land Use Plans

Forest Service planning incorporates, compliments, and responds to local, county, State, and other Federal planning. The agency planning process is designed to minimize conflicts between plans. Conflicts which occur, usually at a local or Regional level, are resolved at that level. A conflict could arise if State game and fish departments set wildlife population levels that are in conflict with the habitat management capability or availability from the National Forests. This could be for species commonly hunted, trapped, or fished, or for commercial fisheries. Also, some Federal agencies may have plans for more ambitious recovery of threatened or endangered species than Forest plans predict.

Water and air resources are mobile resources which enter different planning and legal jurisdictions and frequently serve competing users. Legal requirements have been established to reduce conflict, but it may not be possible to meet the expectation of all users.

The possibility of adverse social and economic effects which might occur from an alternative such as Alternative 5 can cause local, county, and State government concern. The addition of large acreages of classified wilderness can also be at variance with local or regional planning groups.

The alternatives considered in detail may, if implemented, lead to conflicts specific to certain areas. However, no major national or regional conflicts are identifiable at this time.

Chapter 5:

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These current (C) and former (F) Resources Program and Assessment Staff members were responsible for the day-to-day development and production of the 1985 Recommended RPA Program and Final Environmental Impact Statement.

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Circulation of Draft and Final Environmental Impact Statements

CIRCULATION OF DRAFT AND FINAL ENVIRONMENTAL IMPACT STATEMENTS

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Itaru Watanabe, M.D.
Barbara Watrons
Dr. Patricia Watrous
Robert F. Watson
Susan A. Watson
Wendy Watson
Dennis Weber
Donna J. Weber
Margo H. Webster
Theodore S. Weigold
Michael C. Weil
Cindy Weisbart
Edward & Victoria Welch
Charles F. Weller
Clyde G. Weller
Patrick Wendt
Joan Werner
Bonnie West
Terry West
Kimberly Westphal
Linda L. Wheeler
Karen S. Whitaker
Barbara J. White
Karen K. White
Lew Whitman
Edward Whitmore
Pat J. Wibh
Clifford B. Wiita
Hazel Wilcher
Carl Wilhelm
Charleen Wilks
Tim C. Wilks
Ben Williams
Clarence Williams
Marita Williams
Richard C. Williams
Paul Willis
Carl C. Wilson
Iven Wilson
Lee Wilson
Ron Windler
E. Robert Winter
Richard Wirms
Floyd W. Wisely
Kenneth L. Wolfe
Walt Womack
Charlene Wood
Floyd E. Wood
Richard Wood
William G. Wood
R.O. Woodfin
Dennis R. Woodson
Jean Worth
Carolyn A. Wren
Sharon Wrinkle
Eric Wunz
Ken Wyvill
Jennifer Yaiauls
K. Yates
Vanya Yoors
Carol Young
Bill Yule
Francis J. Yurczyk
Janet Ann Zackert
William Zaffer
E. Zahn
Ramon Zielinski
Bob Zybach

INTEREST GROUPS

Civic

American Association of Blacks in Energy

Chambers of Commerce
Ketchikan, AK
Grangeville, ID
Riggins, ID
Enterprise, OR
Roseburg, OR

League of Women Voters
Eugene, OR

Educational; Professional Societies

American Institute of Professional Geologists

Colorado State University

Mississippi Forestry Assoc.

Mississippi State University

North Carolina State Univ.

Ozark Society
Springfield, MO

Public Lands Council

Soc. of American Foresters
Ashland, ME

Society for Range Mgmt.

South Carolina Forestry Association

Tuolumne County Historical Society

University of Arizona

University of California

University of Florida

University of Hawaii

University of Montana

Motorized Recreation

California Association of Four Wheel Drive Clubs, Inc.

Idaho Trails Council

International Snowmobile Industry Assoc.

Jeeping Nomads, Inc.

Montana Snowmobile Assoc.

Northwest Road & Trail

Washington Snowmobile Assoc.

Service-producing Businesses; Permittees

Colorado Ski Country, USA

Munishing Area Visitors Bureau

Ore House Corporation

South Dakota Campground Owners Association

United States Recreational Ski Association

Winter Park Recreational Assoc.

Business; Commodity; or Representative

Alaska Miners Association

Alaska Women in Timber

AMAX Lead Company

American Forest Products, Co.

Arcata Forest Products Group

Assoc. of Natl. Grasslands, Inc.

Atlantic Richfield Company

Black Hills Forest Resource Association

Blue Mesa Forest Prods., Inc.

Bohemia Mine Owners' Assoc.

Bohemia, Inc.

Boise Cascade Corporation
Boise, ID
Emmett, ID
La Grande, OR
Medford, OR

Boise Southern

Brand S. Corporation

California Cattlemen's Assoc.

Celsius Energy Company

Champion International
McCloud, CA
Milltown, MT

Chec

Conoco, Inc.

Crown Zellerbach Corp.
Vernonia, OR

Doss Construction Co.

Douglas Timber Ops., Inc.

Edgerton Lumber

Ellingson Lumber Company

Evergreen Forest Prods.,Inc.

Forest Farmers Association

Forest Industries, Inc.

Gold Fields Mining Corp.

Heela Mining Company

Hi-Ridge Lumber Company

Idaho Stud Mill

Idaho Women in Timber
Grangeville, ID
Lewiston, ID

Industrial Forestry Assoc.

Inland Forest Res. Council

International Paper Company
Georgetown, SC

KOGAP Manufacturing Company

Louisiana Pacific Corp.
Deerlodge, MT

Malheur Lumber Company

Mead Paper
Dayton, OH
Escanaba, MI

Michigan's Upper Peninsula Travel & Recreation Assoc.

Minerals Explor. Coalition

Mining Indus. Council of Missouri

Montana Mining Association

Montana Public Land Council

Montana Women in Timber

National Association of Manufacturers

National Cattlemen's Assoc.

National Forest Products Assoc.

Natural Resources Defense Council, Inc.

Northwest Pine Association

Operation Action U.P.

Oregon Cattlemen's Assoc.

Oregon Trout

Owens-Illinois, Inc.

Petroleum Assoc. of Wyoming

Plum Creek Timber Co., Inc.

Pope and Talbot, Inc.
Spearfish, SD

Potlatch Corporation
Lewiston, ID
Cloquet, MN

Public Lands Council

Pyramid Mountain Lumber Co.

Resource Development Council for Alaska

Rocky Mountain Oil & Gas Association, Inc.

Roseburg Lumber Company

St. Regis Paper Company
NY
Libby, MT

Sawtooth Forest Products, Inc.

James W. Sewall Company

Sho-Me Power Corporation

Sierra Forest Products

Sierra Pacific Industries

J. R. Simplot Company

Simpson Timber Company

Slocum Associates

Southern Pacific Land Company

F.H. Stoltze Land & Lumber Co.
Dillon, MT
Columbia Falls, MT

Technical Association of the Pulp and Paper Industry

Texas and Southwest Cattle Raisers Association

Timber Producers Assoc. of Michigan & Wisconsin, Inc.

B.N. Timberlands, Inc.

Trinity Resource Action Council

U.S. Borax & Chemical Corp.

Utah Wool Growers

Waldo Mining District

Western Forest Industries Assoc.

Western Timber Association

Westvaco

Western Wood Products Assoc.

Weyerhaeuser Company

White Pine Sash Company

Wickes Forest Industries

Ed Williston Associates, Inc.

Woodland Management Consultants

Conservationist; Preservationist; Nonmotorized Recreationist

Alpine Lakes Protection Society

American Fisheries Society
Rancho Cordova, CA
Bethesda, MD
Moscow, ID

American Wilderness Alliance

Appalachian Mountain Club

Cascade Field and Stream Club

California Native Plant Society

California Trout

Chaves County Wildlife Fed.

Denver Alpine Club

Desomount Club

The Evergreen Naturalists Audubon Society, Inc.

Fed. of Western Outdoor Clubs

Grande Ronde Resource Council

The Georgia Conservancy

Hood Canal Env. Council

Idaho Alpine Club

Idaho Environment Council

Inland Empire Big Game Comm.

International Association of Fish & Wildlife Agencies

Izaak Walton League of America
La Grande, OR
Portland, OR

Kalmiopsis Action Alliance

Madison Gallatin Alliance

Mazamas

Michigan United Cons. Clubs

Mississippi Wildlife Fed.

Montana Audubon Council

Montana Wilderness Assoc.

The Mountaineers

The Nature Conservancy

National Audubon Society
Carbondale, IL
Minneapolis, MN
Eugene, OR
Portland, OR
Roseburg, OR
Sequim, WA

National Off-Road Bicycle Association

National Wildlife Federation

Newton County Wildlife Association

North Cascade Conservation Council

North Idaho Cons. League

Northcoast Env. Center

Northeastern Californians for Wilderness

Obsidians

Olympic Park Association

Oregon Environmental Council

Oregon Hunters' Association

Oregon Sportsmen

Oregon Trout

The Ozark Society
Little Rock, AR

Pacific Marine Technology

Powder River Sportsmen Club

Public Lands Committee

Ravalli County Fish & Wildlife Association

Salmon River Concerned Citizens

Sierra Club
Boston, MA
Gulfport, MS
Tatoosh Group
Chattanooga, TN
Knoxville, TN
Houston, TX
Huntsville, TX
Corvallis, OR
Seattle, WA

Siskiyou Audubon Society

South Carolina Wildlife Federation

South Fork Trinity Watershed Association

Southeast Alaska Conservation Council

Southeastern Association of Fish and Wildlife Agencies

Southern Illinois Audubon Society

Southern Oregon Coalition for Alternatives to Pesticides

Southern Oregon Res. Alliance
Grants Pass, OR
Roseburg, OR

Sport Fishing Institute

Texas Committee on Natural Resources

The Wilderness Society

The Wildlife Society
Arcata, CA
Northern CA
Portola, CA
San Bernardino, CA
Colorado
Gainesville, FL
Murray, KY
Ceresco, ME
Bethesda, MD
Glendive, MO
Athens, OH
Columbus, SC

Tooele County Wildlife

Trail Club of Oregon

Trout Limited

Umpqua Wilderness Defenders

Washington Environmental Council

Washington Native Plant Society

Washington Wilderness Coalition

Wenatchee Sportsmen's Association

Western Association of Fish and Wildlife Agencies

Wilderness & Resources Association

Wilderness Management Research

PUBLIC AGENCIES

State

Alabama State Forester

Arizona Commission on Agriculture and Horticulture

California Department of Parks and Recreation

Colorado:
- Dept. of Natural Resources
- Division of Wildlife
- Historical Society
- Forest Service
- Soil Conservation Board

Florida:
- Dept. of Agriculture & Consumer Services
- Department of State
- Game & Fresh Water Fish Comm.
- Dept. of Env. Programs
- Dept. of Environmental Regulation
- Dept. of Natural Resources

Georgia State Conservationist

Guam Territorial Forester

Idaho Fish and Game

Indiana Dept. of Natural Res.

Iowa Conservation Commission

Commonwealth of Kentucky:
- Dept. of Fish & Wildlife Resources
- Natural Resources & Env. Protection Cabinet

Maine Dept. of Conservation

Mississippi:
- Forestry Commission
- State Clearinghouse
- Dept. of Wildlife Cons.

Missouri:
- Office of Administration
- Executive Office
- Dept. of Conservation
- Geological Survey
- Dept. of Natural Res.
- Dept. of Wildlife

Nebraska:
- Game & Parks Commission
- Dept. of Roads

Nevada:
- Division of State Lands
- Dept. of Wildlife

New Hampshire Dept. of Res. and Economic Development

New Mexico:
- Dept. of Agriculture
- State Clearinghouse

North Carolina:
- Dept. of Administration
- State Conservationist

North Dakota:
- State Conservationist
- State Forester
- Dept. of Nat. Resources & Community Development

Ohio State Clearinghouse

Oklahoma:
- State Forester
- Dept. of Wildlife Cons.

Oregon:
- State Clearinghouse
- Dept. of Energy
- Dept. of Env. Quality
- Dept. of Fish and Wildlife
- State Forester
- Dept. of Geology & Minerals
- Dept. of Lands
- Dept. of Parks and Rec.
- Dept. of Transportation
- Dept. of Water Resources

Commonwealth of Pennsylvania
- Dept. of Env. Resources

Commonwealth of Puerto Rico
- Dept. of Natural Resources

South Dakota Dept. of Game, Fish and Parks

Tennessee Dept. of Cons.

Texas:
- Dept. of Community Affairs
- Dept. of Highways and Public Transportation
- Forest Service
- Historical Commission
- Parks and Wildlife Dept.

Utah State Extension Service

Washington:
- State Archaeologist
- Dept. of Ecology
- Dept. of Fisheries
- Dept. of Game
- Dept. of Natural Resources
- Interagency Committee for Outdoor Recreation

Washington Parks and Rec. Div.

West Virginia State Forester

Wisconsin Dept. of Natural Res.

Wyoming:
- Game and Fish Dept.
- Recreation Commission
- State Engineer's Office
- Water Development Commission

Commonwealth of Virginia:
- Council on the Environment
- Dept. of Conservation and Economic Development
- Water Control Board

Local

Beaverhead Planning Board
Dillon, MT

Citizen's Advisory Commission on Federal Areas

Clearwater RC&D Council
Lewiston, ID

Erie County Dept. of Planning
Erie, PA

Jackson Dept. of Planning
Medford, OR

Kern County Planning Dept.
Bakersfield, CA

Ketchikan Gateway Borough
Alaska

Maricopa Park and Rec. Dept.
Phoenix, AZ

City of Salem, OR

Central Shenandoah Planning District Commission

Valley Soil Cons. District
McCall, ID

Federal

U.S. Air Force
Dallas, TX

U.S. Dept. of Agriculture
Extension Service
Foreign Agricultural Service
Forest Service
Montgomery, AL
Russelville, AR
Missoula, MT
Ashville, NC
Albuquerque, NM
Lakeview, OR
Fish & Wildlife Mgmt.
Portland, OR
State & Private Forestry
Portland, OR
Range & Watershed Mgmt.
Portland, OR
Columbia, SC
Okanogan, WA
Richwood, WV
Office of International
Cooperation & Development
Science and Education
Soil Conservation Service
Boise, ID
Albuquerque, NM
Washington, D.C.

U.S. Army
Portland, OR

U.S. Army Corps of Engineers
Mobile, AL
Alaska
Omaha, NB
Pittsburg, PA

U.S. Dept. of Commerce
Natl. Oceanic & Atmospheric Adm.
Washington, D.C.
Portland, OR
Terminal Island, WA

U.S. Dept. of Energy
Golden, CO
Portland, OR

U.S. Environmental Protection
Agency

U.S. Dept. of Housing & Urban
Development
Portland, OR

U.S. Dept. of Interior
Bureau of Indian Affairs
Bureau of Land Management
Folsom, CA
Fish and Wildlife Service
Salt Lake City, UT
National Park Service
San Francisco, CA

U.S. Dept. of State
Bureau of Oceans and
International Env. &
Scientific Affairs

Tennessee Valley Authority

Elected Officials

Board of County Commissioners
Golconda, IL

Caribou County Commission
Soda Springs, ID

City of Hoonah, AK

Columbia County Board of
Commissioners
Dayton, WA

County Court
Grant County, OR

El Dorado Board of Supervisors
Placerville, CA

Granite County Board of County
Commissioners
Philipsburg, MT

Idaho Association of Counties
Soda Springs, ID

Lane County Board of
Commissioners
Eugene, OR

Linn County
Albany, OR

Modoc County Board of
Supervisors
Alturas, CA

Monterey County Board of
Supervisors
Monterey, CA

Nevada Board of Supervisors
Nevada City, CA

Wallowa County Judge
Enterprise, OR

Office of the Governor
Alabama
Alaska
Florida
Missouri
North Dakota
Oregon
Utah
Washington
Wyoming

Tribal Governments

Columbia River InterTribal
Fish Commission

Evergreen Legal Services

Klamath Indian Game Comm.

Klamath Tribe

Lummi Indian Business Council

Point No Point Treaty Council

Squaxin Island Tribe

Tulalip Tribes

Glossary

Acre-foot.--A water or sediment volume measurement term, equal to the amount of water which would cover an area of one acre to a depth of one foot: i.e., 43,560 cubic feet or 325,851 gallons.

Activity.--A measure, course of action, or treatment that is undertaken to directly or indirectly produce, enhance, or maintain forest and range land outputs or achieve administrative or environmental quality objectives.

Allocated funds.--Monies distributed to other USDA agencies which receive assistance from the Forest Service. Examples of NFS programs include YCC, other human resource programs, O&C grants, and land and water conservation programs. State and Private Forestry examples are the Agriculture Conservation Program, the Forestry Incentives Program, and Rural Community Fire Protection.

Alternative.--One of several policies, plans or projects proposed for decisionmaking.

Amenity value.--Typically used in land-use planning to describe the resource properties for which market values (or proxy values) are not or cannot be established.

Anadromous fish.--Fish that ascend rivers from the sea in certain seasons for breeding and spawning; for example, salmon, steelhead and shad.

Animal unit months (AUMs).--Amount of feed or forage required by one mature (1000 pound) cow for the equivalent for one month.

Appropriated funds.--Monies authorized by an act of Congress which permit Federal agencies to incur obligations and to make payments out of the U.S. Treasury for specified purposes.

Arterial roads.--Primary travel routes that provide service to a large land area, and which usually connect with public highways, or other Forest Service arterial roads.

Base sale schedule.--A timber sale schedule formulated on the basis that the quantity of timber planned for sale and harvest for any future decade is equal to or greater than the planned sale and harvest for the preceding decade. This planned sale and harvest for any decade is not greater than the long-term sustained yield capacity. This expresses the principle of nondeclining flow.

Benchmark.--Reference points that define the bounds within which feasible management alternatives can be developed. Benchmarks may be defined by resource output or economic measures.

Benefit (value).--Inclusive term to quantify the results of a proposed activity, project or program expressed in monetary or nonmonetary terms.

Board foot.--A unit of measurement represented by a board one foot square and one inch thick.

British thermal unit.--The amount of heat required to raise the temperature of one pound of water one degree Fahrenheit.

Capability.--The potential of an area of land to produce resources, supply goods and services, and allow resource uses under an assumed set of management practices and at given levels of management intensity. Capability depends upon current site conditions such as climate, slope, landform, soils and geology, as well as the application of management practices, such as silviculture or protection from fire, insects and disease.

Capital intensive.--The nature of projects or programs whose cost is primarily attributable to developed structures, facilities, or improvements used as inputs in production processes.

Capital investment costs.--A cost that increases the amount of natural or developed resources (assets) needed to maintain or increase the flow of outputs in the future. Capital investment benefits are normally realized over a long period of time.

Carrying capacity.--1 (recreation): the amount of recreation use an area can sustain without deterioration of site quality; 2 (wildlife): the maximum number of animals an area can support during a given period of the year; 3 (range): the maximum stocking rate possible without damaging the vegetation or related resources. Carrying capacity may vary from year to year on the same area due to fluctuating forage production.

Collector roads.--Roads that serve small land areas and are usually connected to National Forest arterial roads or public highways. They collect traffic from local roads and terminal facilities. Collector roads are maintained for continuous use.

Commercial forestland.-- Forestland that is producing, or is capable of producing, crops of industrial wood and (a) has not been withdrawn by Congress, the Secretary of Agriculture, or the Chief of the Forest Service; (b) land where existing technology and knowledge is available to ensure timber production without irreversible damage to soils productivity or watershed conditions; and (c) land where existing technology and knowledge, as reflected in current research and experience, provides reasonable assurance that adequate restocking can be obtained within 5 years after final harvesting.

Community stability.--The capacity to absorb and/or cope with change without major hardships to groups or institutions within the community.

Concern.--Apprehension about whether some land use action might produce some undesirable results. A point of dispute which can only be vaguely defined or in which the potential undesirable results of a land use action are more speculative than documentable. When the relationship between the action and undesirable result can be sharply defined, a point of dispute is referred to as an issue rather than a concern.

Consumers' benefit.--The difference between the market price, or estimated market price of an output and the actual fee that is being collected for the output.

Consumers' surplus.-- The maximum sum of money a consumer would be willing to pay for a given amount of a good, service, or use, less the amount be actually pays.

Cooperative Forest Service programs.--Operating programs administered by the Forest Service in cooperation with State forestry agencies, designed to accomplish goals for non-Federal public and private forest and range land.

Cost effective.--Achieving specified outputs or objectives under given conditions for the least cost.

Cubic foot.--A unit of measure of wood equivalent to a cube with 12 inch sides.

Cultural resource.--The historical or archaeological remains of sites, structures or objects used by humans.

Departure.--A schedule which deviates from the principle of nondeclining flow by exhibiting a planned decrease in the timber sale and harvest schedule at any time in the future.

Economic efficiency.--The usefulness of inputs (costs) to produce outputs (benefits) and effects when all costs and benefits that can be identified and valued are included in the computations. Economic efficiency is usually measured using present net value, though use of benefit-cost ratios and rates-of-return may sometimes be appropriate.

Ecosystem.--A complete, interacting system of organisms considered together with their environment; for example a marsh, a watershed, or a lake.

Employment.--Labor input into a production process, measured in the number of person-years or jobs. A person-year is 2,000 working hours by one person working yearlong or by several persons working seasonally.

Endangered species.--Any species of animal or plant which is in danger of extinction throughout all or a significant portion of its range.

Effects (direct).--Impacts which are caused by an action and occur at the same time and place.

Effects (indirect).--Impacts which are caused by an action and are later in time or further removed in distance, but are still reasonably foreseeable.

Fire management effectiveness index.--A value measuring effectiveness of annual fire management programs. It is the cost of providing fire protection to 1,000 acres. The value is obtained by using a formula which incorporates total fire management and suppression costs and net value change divided by acres protected.

Forage.--All browse and nonwoody plants available to livestock or wildlife for feed.

Goal.--A concise statement that describes a desired condition to be achieved. It is normally expressed in broad, general terms, and is timeless in that it has no specific date by which it is to be completed. Goal statements form the principal bases from which objectives are developed.

Habitat.--The place where a plant or animal naturally or normally lives and grows.

Habitat capability.--The estimated ability of an area, given existing or predicted habitat conditions, to support a wildlife, fish or plant population. It is measured in terms of potential population numbers.

Hardwood.--Usually broad-leaved and deciduous trees.

Indicator species.--Species identified in a planning process that are used to monitor the effects of planned management activities on viable populations of wildlife and fish including those that are socially or economically important.

Integrated pest management.--A process for selecting strategies to regulate forest pests in which all aspects of a pest-host system are studied and weighed. The information considered in selecting appropriate strategies includes the impact of the unregulated pest population on various resource values, alternative regulatory tactics and strategies, and benefit/cost estimates for these alternative strategies. Regulatory strategies are based on sound silvicultural practices and ecology of the pest-host system and consist of a combination of tactics such as timber stand improvement plus selective use of pesticides. A basic principle in the choice of strategy is that it be ecologically compatible or acceptable.

Intensive resource management.--Maximizing cost-efficient production of resources while maintaining the environment. All available technology and practices are considered to improve production, quality, and utilization.

Lands suitable for timber production.--Forest lands selected to be managed under a prescription that includes timber production.

Lifestyle.--The characteristic way people live, indicated by consumption patterns, work, leisure, and other activities.

Long-term sustained-yield timber capacity.--The highest uniform wood yield from lands being managed for timber production that may be sustained under a specified management intensity consistent with multiple-use objectives.

Management direction.--A statement of multiple use and other goals and objectives, associated management prescriptions, and standards and guidelines for attaining them.

Market value.--The unit price of a good normally exchanged in the market place after at least one stage of production, expressed in terms of what people are willing to pay as evidenced by market transactions.

Mission.--A major, continuing national area of concern or responsibility of the Forest Service that is directed by legislation or Executive regulation. The Forest Service mission represents the basic reason for the existence of the Forest Service as an agency in the Federal Government and characterizes the agency's role in solving broad, national problems.

Mitigation.--Avoiding or minimizing impacts by limiting the degree or magnitude of the action and its implementation; rectifying the impact by repairing, rehabilitating, or restoring the affected environment; reducing or eliminating the impact by preservation and maintenance operations during the life of the action.

Multiple use.--The management of all the various renewable surface resources of the National Forest System so that they are utilized in the combination that will best meet the needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in the use to conform to changing needs and conditions; that some lands will be used for less than all of the resources; and harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output.

National Forest System.--The term used to include the National Forest, National Grasslands, and other related lands for which the Forest Service is assigned administrative responsibility.

Net annual growth.--The net increase in the volume of trees during a specified year. Components of net annual growth include the increment in net volume of trees at the beginning of the specific year and surviving to its end, plus the net volume of trees reaching the minimum size class during the year, minus the volume of trees that dies during the year, and minus the net volume of trees that become rough or rotten during the year.

Nondeclining flow.--See base sale schedule.

Objective.--A concise, time-specific statement of measurable planned results that respond to preestablished goals. An objective forms the basis for further planning to define the precise steps to be taken and the resources to be used in achieving identified goals.

Operational costs.--Those costs required to operate programs, administer the activities involved, and maintain capital improvements.

Opportunity.--A proposal that is considered in developing alternative activities, projects, or programs where an option exists to invest profitably to improve or maintain a present condition.

Output.--A good, service, or on-site use that is produced from forest and range land resources.

Output, induced.--A good, service, or on-site use which is incidental to the objectives of the resource activity. An example is the timber harvest activity which produces a primary output of board feet of timber and a induced output of acres of improved wildlife habitat because of the harvest activity.

Output, market.--A good, service, or on-site use that can be purchased at a price.

Output, nonmarket.--A good, service, or on-site use not normally exchanged in a market.

Output, primary.--A good, service, or on-site use that results from the completion of an activity, project, or program that meets the specific objective of the resource. Examples are board feet of timber produced by timber stand improvements, reforestation, and recreation visitor days at campgrounds.

Persons-at-one-time (PAOT).--Generally used as "maximum PAOT" to indicate the capacity of an area or facility to support peak usage within established user-density standards and without degradation of biophysical resources.

Poletimber trees.--Live trees of commercial species at least five inches in diameter at breast height but smaller than sawtimber size, and of good form and vigor.

Present net value.--The difference between the discounted value (benefits) of all outputs to which monetary values or established market prices are assigned and the total discounted costs of managing the planning area.

Present value cost.--The sum of each year's costs, discounted to the present.

Present value benefit.--The sum of each year's benefit values, discounted to the present.

Program.--Sets of activities or projects with specific objectives, defined in terms of specific results and responsibilities for accomplishment.

Program budget.--A plan that allocates annual funds, workforce ceilings and targets among agency management units.

Quad.--1,000 trillion British thermal units.

Range allotment.--A designated area of land available for livestock grazing upon which a specified number and kind of livestock may be grazed.

Rangeland.--Land on which the climax vegetation (potential natural plant community) is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing and browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundra, and certain forb and shrub communities. It also includes areas seeded to native or adapted introduced species that are managed like native vegetation.

Recreation visitor day.--Twelve visitor hours, which may be aggregated continuously, intermittently, or simultaneously by one or more persons.

Reforestation.--The restocking of an area with trees, either naturally or artificially most commonly used in reference to the latter. Reestablishment of a crop on forest land; includes measures to obtain natural regeneration as well as tree planting and seeding. Reforestation is done to produce timber and other forest products, protect watersheds, prevent erosion, and improve other social and economic values of the forests, such as wildlife, recreation, and natural benefits.

Renewable resources.--Resources that are possible to use indefinitely, when the use rate does not exceed the ability to renew the supply. However, in the RPA program, the term is used to describe those matters within the scope of responsibilities and authorities of the Forest Service as required by the Resources Planning Act. Consequently, the resources include: timber, range, minerals, wildlife and fish, water, recreation, and wilderness.

Resource element.--A major endeavor which fulfills statutory or Executive requirements and indicates a collection of activities from the various operating programs required to accomplish the Forest Service mission. There are seven resource elements:

(1) Recreation: The resources which provide outdoor recreational opportunities for the Nation. Included are development of new knowledge, and technical assistance.

(2) Wilderness: The Nation's wilderness resource. This element includes lands designated for preservation and protection in their natural condition for the National Wilderness Preservation System.

(3) Wildlife and fish: The resources which are directed toward protection and improvements of wildlife and fish populations and habitats. Coordination with State agencies is a key element. Included are technical assistance and development of new knowledge.

(4) Range: The resources needed to manage, protect, and develop forest and range lands for grazing. The element encompasses activities on both National Forest and private forest and range lands, and the research needed to effectively consider management alternatives.

(5) Timber: The resources needed to grow wood and to make it available to the Nation on a continuing basis. This element includes activities needed to protect, manage, harvest, and utilize wood and wood-related products.

(6) Water: The administration and enhancement of water resources in a manner consistent with other resource values. This element includes watershed and river basin planning and development in cooperation with States and other agencies, and research designed to gain further knowledge.

(7) Minerals: The administration of exploration and development of minerals in a manner consistent with other resource values on National Forest lands. This element also includes research and cooperative activities to enhance reclamation of mined lands.

Riparian area.--An area with distinctive resource values and characteristics that is comprised of an aquatic ecosystem, a riparian ecosystem, and adjacent upland areas that have direct effects on the riparian and aquatic ecosystems. This includes floodplains, wetlands, and all areas within a horizontal distance of approximately 100 feet from the normal high-water line of a stream channel, or from the shoreline of a standing body of water.

Rotation.--The planned number of years between the formation of a generation of trees and their harvest at a specified stage of maturity.

Roundwood.--The volume of logs or other round products required to produce lumber, plywood, wood pulp, paper, or other similar products.

Sawtimber.--Trees containing at least one 12-foot sawlog or two noncontiguous 8-foot logs, and meeting regional specifications for freedom from defect. Softwood trees must be at least 9 inches in diameter and hardwood trees 11 inches in diameter at breast height.

Sawtimber volume.--Net volume in board feet of the sawlog portion of live sawtimber trees.

Scoping.--The range of actions, alternatives, and impacts considered in an environmental impact statement.

Sensitive species.--The plant and animal species identified by a Regional Forester for which population viability is a concern as evidenced by significant current or predicted downward trends in population numbers or density, or downward trends in habitat capability which would reduce a species' distribution.

Silvicultural system.--A management process whereby forests are tended, harvested, and replaced, resulting in a forest of distinctive form. Systems are classified according to the method used in harvesting the mature crop, and provide for regeneration according to the type of forest thereby produced.

Softwoods.--Coniferous trees, usually evergreen, having needles or scale-like leaves.

Subculture.--A distinctive pattern of beliefs, values, habits, and customs shared by a portion of the population, often because of a common ethnic heritage, occupation, or religious or ideological orientation.

Succession.--The progressive development of vegetation toward its highest ecological expression, the climax community; replacement of one plant community by another.

Suitability.--The appropriateness of applying certain resource management practices to a particular area of land, as determined by an analysis of the economic and environmental consequences and the alternative uses foregone. A unit of land may be suitable for a variety of individual or combined management practices.

Support element.--A major Forest Service endeavor which sustains the resource elements. There are five support elements:

(1) Protection: Activities which protect and maintain basic values, and prevent and reduce damages and losses to multiple resource element outputs on forest and range lands. They include insect and disease control, fire protection, law enforcement, development of new knowledge, and the technical assistance needed for National Forest and private forest and range lands. Protection activities which primarily benefit a single resource element are considered a part of the benefiting element and are not included within the Protection element.

(2) Lands: Activities such as land management planning, special land use administration, landownership adjustment, multiresource inventories and special multiresource studies.

(3) Soils: Activities which primarily protect, conserve, and enhance the basic soil productivity of forest and range lands. They benefit multiple resource protection, rehabilitation, and other improvement activities directed toward public and private lands through cooperative and technical assistance efforts, and in accord with Soil Conservation Service cooperative agreements. Soil activities which primarily benefit a single resource element output are considered a part of the benefiting element and are not included within the Soils element.

(4) Facilities: Activities which provide and maintain capital improvements such as buildings, roads, trails, fences, bridges, dams, and airfields that primarily facilitate multiple resource element output production. They include development of new knowledge and its application through cooperative and technical assistance efforts. Facility activities that can clearly be identified as primarily supporting a single resource element output are considered a part of the benefiting element and are not considered in the Facility element.

(5) Rural community and human resources: The responses needed for people and communities to help themselves. The element includes activities that are directed to individuals in programs such as the Job Corps, and those directed toward improving the economy and the quality of the environment in rural areas and communities such as the Urban and Community Forestry Program.

Threatened species.--Any species of animal or plant which is likely to become an endangered species within the foreseeable future throughout all or a portion of its range.

Timber Production.-- The purposeful growing, tending, harvesting, and regeneration of regulated crops of trees to be cut into logs, bolts, or other round sections for industrial or consumer use. The term timber production does not include production of fuelwood.

Viable population.--A population which has adequate numbers and dispersion of reproductive individuals to ensure the continued existence of the species in the planning area.

Visual condition classes.--Categories of landscape alterations measured in degrees of deviation from the natural appearing landscape.

Wilderness.--An area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, and protected and managed to preserve its natural conditions. An area which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude, or a primitive and unconfined type of recreation; (3) comprises at least 5,000 acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4), may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.

Wildlife and fish user day (WFUD).--Twelve visitor hours which may be aggregated continuously, intermittently, or simultaneously by one or more persons.

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Appendix A:

Forest and Rangeland Renewable Resources Planning Act

• **Act of August 17, 1974 (88 Stat. 476, as amended; 16 U.S.C. 1600-1614)**

Sec. 1. This Act may be cited as the "Forest and Rangeland Renewable Resources Planning Act of 1974". (16 U.S.C. 1601 note)

Sec. 2. Findings.—The Congress finds that—

(1) the management of the Nation's renewable resources is highly complex and the uses, demand for, and supply of the various resources are subject to change over time;

(2) the public interest is served by the Forest Service, Department of Agriculture, in cooperation with other agencies, assessing the Nation's renewable resources, and developing and preparing a national renewable resource program, which is periodically reviewed and updated;

(3) to serve the national interest, the renewable resource program must be based on a comprehensive assessment of present and anticipated uses, demand for, and supply of renewable resources from the Nation's public and private forests and rangelands, through analysis of environmental and economic impacts, coordination of multiple use and sustained yield opportunities as provided in the Multiple-Use Sustained-Yield Act of 1960 (74 Stat. 215; 16 U.S.C. 528-531), and public participation in the development of the program;

(4) the new knowledge derived from coordinated public and private research programs will promote a sound technical and ecological base for effective management, use, and protection of the Nation's renewable resources;

(5) inasmuch as the majority of the Nation's forests and rangeland is under private, State, and local governmental management and the Nation's major capacity to produce goods and services is based on these nonfederally managed renewable resources, the Federal Government should be a catalyst to encourage and assist these owners in the efficient long-term use and improvement of these lands and their renewable resources consistent with the principles of sustained yield and multiple use;

(6) the Forest Service, by virtue of its statutory authority for management of the National Forest System, research and cooperative programs, and its role as an agency in the Department of Agriculture, has both a responsibility and an opportunity to be a leader in assuring that the Nation maintains a natural resource conservation posture that will meet the requirements of our people in perpetuity; and

(7) recycled timber product materials are as much a part of our renewable forest resources as are the trees from which they originally came, and in order to extend our timber and timber fiber resources and reduce pressures for timber production from Federal lands, the Forest Service should expand its research in the use of recycled and waste timber product materials, develop techniques for the substitution of these secondary materials for primary materials, and promote and encourage the use of recycled timber product materials. (16 U.S.C. 1600)

Sec. 3. Renewable Resource Assessment.—(a) In recognition of the vital importance of America's renewable resources of the forest, range, and other associated lands to the Nation's social and economic well-being, and of the necessity for a long term perspective in planning and undertaking related national renewable resource programs administered by the Forest Service, the Secretary of Agriculture shall prepare a Renewable Resource Assessment (hereinafter called the "Assessment"). The Assessment shall be prepared not later than December 31, 1975, and shall be updated during 1979 and each tenth year thereafter, and shall include but not be limited to—

(1) an analysis of present and anticipated uses, demand for, and supply of the renewable resources, with consideration of the international resource situation, and an emphasis of pertinent supply and demand and price relationship trends;

(2) an inventory, based on information developed by the Forest Service and other Federal agencies, of present and potential renewable resources, and an evaluation of opportunities for improving their yield of tangible and intangible goods and services, together with estimates of investment costs and direct and indirect returns to the Federal Government;

(3) a description of Forest Service programs and responsibilities in research, cooperative programs and management of the National Forest System, their interrelationships, and the relationship of these programs and responsibilities to public and private activities; and

(4) a discussion of important policy considerations, laws, regulations, and other factors expected to influence and affect significantly the use, ownership, and management of forest, range, and other associated lands.

(b) To assure the availability of adequate data and scientific information needed for development of the Assessment, section 9 of the McSweeney-McNary Act of May 22, 1928 (45 Stat. 702, as amended, 16 U.S.C. 581h), is hereby amended to read as follows:

"The Secretary of Agriculture is hereby authorized and directed to make and keep current a comprehensive survey and analysis of the present and prospective conditions of and requirements for the renewable resources of the forest and range lands of the United States, its territories and possessions, and of the supplies of such renewable resources, including a determination of the present and potential productivity of the land, and of such other facts as may be necessary and useful in the determination of ways and means needed to balance the demand for and supply of these renewable resources, benefits and uses in meeting the needs of the people of the United States. The Secretary shall carry out the survey and analysis under such plans as he may determine to be fair and equitable, and cooperate with appropriate officials of each State, territory, or possession of the United States, and either through them or directly with private or other agencies. There is authorized to be appropriated not to exceed $20,000,000 in any fiscal year to carry out the purposes of this section."

(c) The Secretary shall report in the 1979 and subsequent Assessments on:

(1) the additional fiber potential in the National Forest System including, but not restricted to, forest mortality,

growth, salvage potential, potential increased forest products sales, economic constraints, alternate markets, contract considerations, and other multiple use considerations;

(2) the potential for increased utilization of forest and wood product wastes in the National Forest System and on other lands, and of urban wood wastes and wood product recycling, including recommendations to the Congress for actions which would lead to increased utilization of material now being wasted both in the forests and in manufactured products; and

(3) the milling and other wood fiber product fabrication facilities and their location in the United States, noting the public and private forested areas that supply such facilities, assessing te degree of utilization into product form of harvested trees by such facilities, and setting forth the technology appropriate to the facilities to improve utilization either individually or in aggregate units of harvested trees and to reduce wasted wood fibers. The Secretary shall set forth a program to encourage the adoption by these facilities of these technologies for improving wood fiber utilization.

(d) In developing the reports required under subsection (c) of this section, the Secretary shall provide opportunity for public involvement and shall consult with other interested governmental departments and agencies.

NOTE.—The National Forest Management Act of October 22, 1976, mistakenly added another subsection (d). This mistake is preserved in this text.

(d)(1) It is the policy of the Congress that all forested lands in the National Forest System shall be maintained in appropriate forest cover with species of trees, degree of stocking, rate of growth, and conditions of stand designed to secure the maximum benefits of multiple use sustained yield management in accordance with land management plans. Accordingly, the Secretary is directed to identify and report to the Congress annually at the time of submission of the President's budget together with the annual report provided for under section 8(c) of this Act, beginning with submission of the President's budget for fiscal year 1978, the amount and location by forests and States and by productivity class, where practicable, of all lands in the National Forest System where objectives of land management plans indicate the need to reforest areas that have been cut-over or otherwise denuded or deforested, and all lands with stands of trees that are not growing at their best potential rate or growth. All national forest lands treated from year to year shall be examined after the first and third growing seasons and certified by the Secretary in the report provided for under this subsection as to stocking rate, growth rate in relation to potential and other pertinent measures. Any lands not certified as satisfactory shall be returned to the backlog and scheduled for prompt treatment. The level and types of treatment shall be those which secure the most effective mix of multiple use benefits.

(2) Notwithstanding the provisions of section 9 of this Act, the Secretary shall annually for eight years following the enactment of this subsection, transmit to the Congress in the manner provided in this subsection an estimate of the sums necessary to be appropriated, in addition to the funds available from other sources, to replant and otherwise treat an acreage equal to the acreage to be cut over that year, plus a sufficient portion of the backlog of lands found to be in need of treatment to eliminate the backlog within the eight-year period. After such eight-year period, the Secretary shall transmit annually to the Congress an estimate of the sums necessary to replant and otherwise treat all lands being cut over and maintain planned timber production on all other forested lands in the National Forest System so as to prevent the development of a backlog of needed work larger than the needed work at the beginning of the fiscal year. The Secretary's estimate of sums necessary, in addition to the sums available under other authorities, for accomplishment of the reforestation and other treatment of National Forest System lands under this section shall be provided annually for inclusion in the President's budget and shall also be transmitted to the Speaker of the House and the President of the Senate together with the annual report provided for under section 8(c) of this Act at the time of submission of the President's budget to the Congress beginning with the budget for fiscal year 1978. The sums estimated as necessary for reforestation and other treatment shall include moneys needed to secure seed, grow seedlings, prepare sites, plant trees, thin, remove deleterious growth and underbrush, build fence to exclude livestock and adverse wildlife from regeneration areas and otherwise establish and improve growing forests to secure planned production of trees and other multiple use values.

(3) Effective for the fiscal year beginning October 1, 1977, and each fiscal year thereafter, there is hereby authorized to be appropriated for the purpose of reforesting and treating lands in the National Forest System $200,000,000 annually to meet requirements of this subsection (d). All sums appropriated for the purposes of this subsection shall be available until expended.

(e) The Secretary shall submit an annual report to the Congress on the amounts, types, and uses of herbicides and pesticides used in the National Forest System, including the beneficial or adverse effects of such uses. (16 U.S.C. 1601)

Sec. 4. Renewable Resource Program.—In order to provide for periodic review of programs for management and administration of the National Forest System, for research, for cooperative State and private Forest Service programs, and for conduct of other Forest Service activities in relation to the findings of the Assessment, the Secretary of Agriculture, utilizing information available to the Forest Service and other agencies within the Department of Agriculture, including data prepared pursuant to section 302 of the Rural Development Act of 1972, shall prepare and transmit to the President a recommended Renewable Resource Program (hereinafter called the "Program"). The Program transmitted to the President may include alternatives, and shall provide in appropriate detail for protection, management, and development of the National Forest System, including forest development roads and trails; for cooperative Forest Service programs; and for research. The Program shall be developed in accordance with principles set forth in the Multiple-Use Sustained-Yield Act of June 12, 1960 (74 Stat. 215; 16 U.S.C. 528-531), and the National Environmental Policy Act of 1969 (83 Stat. 852; 42 U.S.C. 4321-4347). The Program shall be prepared not later than December 31, 1975.

to cover the four-year period beginning October 1, 1976, and at least each of the four fiscal decades next following such period, and shall be updated no later than during the first half of the fiscal year ending September 30, 1980, and the first half of each fifth fiscal year thereafter to cover at least each of the four fiscal decades beginning next after such updating. The Program shall include, but not be limited to—

(1) an inventory of specific needs and opportunities for both public and private program investments. The inventory shall differentiate between activities which are of a capital nature and those which are of an operational nature;

(2) specific identification of Program outputs, results anticipated, and benefits associated with investments in such a manner that the anticipated costs can be directly compared with the total related benefits and direct and indirect returns to the Federal Government;

(3) a discussion of priorities for accomplishment of inventoried Program opportunities, with specified costs, outputs, results, and benefits; and

(4) a detailed study of personnel requirements as needed to implement and monitor existing and ongoing programs; and

(5) Program recommendations which—

(A) evaluate objectives for the major Forest Service programs in order that multiple-use and sustained-yield relationships among and within the renewable resources can be determined;

(B) explain the opportunities for owners of forests and rangeland to participate in programs to improve and enhance the condition of the land and the renewable resource products therefrom;

(C) recognize the fundamental need to protect and, where appropriate, improve the quality of soil, water, and air resources;

(D) state national goals that recognize the interrelationships between and interdependence within the renewable resources; and

(E) evaluate the impact of the export and import of raw logs upon domestic timber supplies and prices. (16 U.S.C. 1602)

Sec. 5. National Forest System Resource Inventories.—As a part of the Assessment, the Secretary of Agriculture shall develop and maintain on a continuing basis a comprehensive and appropriately detailed inventory of all National Forest System lands and renewable resources. This inventory shall be kept current so as to reflect changes in conditions and identify new and emerging resources and values. (16 U.S.C. 1603)

Sec. 6. National Forest System Resource Planning.—(a) As a part of the Program provided for by section 3 of this Act, the Secretary of Agriculture shall develop, maintain, and, as appropriate, revise land and resource management plans for units of the National Forest System, coordinated with the land and resource management planning processes of State and local governments and other Federal agencies.

(b) In the development and maintenance of land management plans for use on units of the National Forest System, the Secretary shall use a systematic interdisciplinary approach to achieve integrated consideration of physical, biological, economic, and other sciences.

(c) The Secretary shall begin to incorporate the standards and guidelines required by this section in plans for units of the National Forest System as soon as practicable after enactment of this subsection and shall attempt to complete such incorporation for all such units by no later than September 30, 1985. The Secretary shall report to the Congress on the progress of such incorporation in the annual report required by section 8(c) of this Act. Until such time as a unit of the National Forest System is managed under plans developed in accordance with this Act, the management of such unit may continue under existing land and resource management plans.

(d) The Secretary shall provide for public participation in the development, review, and revision of land management plans including, but not limited to, making the plans or revisions available to the public at convenient locations in the vicinity of the affected unit for a period of at least three months before final adoption, during which period the Secretary shall publicize and hold public meetings or comparable processes at locations that foster public participation in the review of such plans or revisions.

(e) In developing, maintaining, and revising plans for units of the National Forest System pursuant to this section, the Secretary shall assure that such plans—

(1) provide for multiple use and sustained yield of the products and services obtained therefrom in accordance with the Multiple-Use Sustained-Yield Act of 1960, and, in particular, include coordination of outdoor recreation, range, timber, watershed, wildlife and fish, and wilderness; and

(2) determine forest management systems, harvesting levels, and procedures in the light of all of the uses set forth in subsection (c)(1), the definition of the terms 'multiple use' and 'sustained yield" as provided in the Multiple-Use Sustained-Yield Act of 1960, and the availability of lands and their suitability for resource management.

(f) Plans developed in accordance with this section shall—

(1) form one integrated plan for each unit of the National Forest System, incorporating in one document or one set of documents, available to the public at convenient locations, all of the features required by this section;

(2) be embodied in appropriate written material, including maps and other descriptive documents, reflecting proposed and possible actions, including the planned timber sale program and the proportion of probable methods of timber harvest within the unit necessary to fulfill the plan;

(3) be prepared by an interdisciplinary team. Each team shall prepare its plan based on inventories of the applicable resources of the forest;

(4) be amended in any manner whatsoever after final adoption after public notice, and, if such amendment would result in a significant change in such plan, in accordance with the provisions of subsections (e) and (f) of this section and public involvement comparable to that required by subsection (d) of this section; and

(5) be revised (A) from time to time when the Secretary finds conditions in a unit have significantly changed, but at least every fifteen years, and (B) in accordance with the provisions of subsections (e) and (f) of this section and public involvement comparable to that required by subsection (d) of this section.

(g) As soon as practicable, but not later than two years after enactment of this subsection, the Secretary shall in accordance with the procedures set forth in section 553 of title 5, United States Code, promulgate regulations, under the principles of the Multiple-Use Sustained-Yield Act of 1960, that set out the process for the development and revision of the land management plans, and the guidelines and standards prescribed by this subsection. The regulations shall include, but not be limited to—

(1) specifying procedures to insure that land management plans are prepared in accordance with the National Environmental Policy Act of 1969, including, but not limited to, direction on when and for what plans an environmental impact statement required under section 102(2)(C) of that Act shall be prepared;

(2) specifying guidelines which—

(A) require the identification of the suitability of lands for resource management;

(B) provide for obtaining inventory data on the various renewable resources, and soil and water, including pertinent maps, graphic material, and explanatory aids; and

(C) provide for methods to identify special conditions or situations involving hazards to the various resources and their relationship to alternative activities;

(3) specifying guidelines for land management plans developed to achieve the goals of the Program which—

(A) insure consideration of the economic and environmental aspects of various systems of renewable resource management, including the related systems of silviculture and protection of forest resources, to provide for outdoor recreation (including wilderness), range, timber, watershed, wildlife, and fish;

(B) provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives, and within the multiple-use objectives of a land management plan adopted pursuant to this section, provide, where appropriate, to the degree practicable, for steps to be taken to preserve the diversity of tree species similar to that existing in the region controlled by the plan;

(C) insure research on and (based on continuous monitoring and assessment in the field) evaluation of the effects of each management system to the end that it will not produce substantial and permanent impairment of the productivity of the land;

(D) permit increases in harvest levels based on intensified management practices, such as reforestation, thinning, and tree improvement if (i) such practices justify increasing the harvests in accordance with the Multiple-Use Sustained-Yield Act of 1960, and (ii) such harvest levels are decreased at the end of each planning period if such practices cannot be successfully implemented or funds are not received to permit such practices to continue substantially as planned;

(E) insure that timber will be harvested from National Forest System lands only where—

(i) soil, slope, or other watershed conditions will not be irreversibly damaged;

(ii) there is assurance that such lands can be adequately restocked within five years after harvest;

(iii) protection is provided for streams, streambanks, shorelines, lakes, wetlands, and other bodies of water from detrimental changes in water temperatures, blockages of water courses, and deposits of sediment, where harvests are likely to seriously and adversely affect water conditions or fish habitat; and

(iv) the harvesting system to be used is not selected primarily because it will give the greatest dollar return or the greatest unit output of timber; and

(F) insure that clearcutting, seed tree cutting, shelterwood cutting, and other cuts designed to regenerate an even-aged stand of timber will be used as a cutting method on National Forest System lands only where—

(i) for clearcutting, it is determined to be the optimum method, and for other such cuts it is determined to be appropriate, to meet the objectives and requirements of the relevant land management plan;

(ii) the interdisciplinary review as determined by the Secretary has been completed and the potential environmental, biological, esthetic, engineering, and economic impacts on each advertised sale area have been assessed, as well as the consistency of the sale with the multiple use of the general area;

(iii) cut blocks, patches, or strips are shaped and blended to the extent practicable with the natural terrain;

(iv) there are established according to geographic areas, forest types, or other suitable classifications the maximum size limits for areas to be cut in one harvest operation, including provision to exceed the established limits after appropriate public notice and review by the responsible Forest Service officer one level above the Forest Service officer who normally would approve the harvest proposal: *Provided*, That such limits shall not apply to the size of areas harvested as a result of natural catastrophic conditions such as fire, insect and disease attack, or windstorm; and

(v) such cuts are carried out in a manner consistent with the protection of soil, watershed, fish, wildlife, recreation, and esthetic resources, and the regeneration of the timber resource.

(h)(1) In carrying out the purposes of subsection (g) of this section, the Secretary of Agriculture shall appoint a committee of scientists who are not officers or employees of the Forest Service. The committee shall provide scientific and technical advice and counsel on proposed guidelines and procedures to assure that an effective interdisciplinary approach is proposed and adopted. The committee shall terminate upon promulgation of the regulations, but the Secretary may, from time to time, appoint similar committees when considering revisions of the regulations. The views of the committees shall be included in the public information supplied when the regulations are proposed for adoption.

(2) Clerical and technical assistance, as may be necessary to discharge the duties of the committee, shall be provided from the personnel of the Department of Agriculture.

(3) While attending meetings of the committee, the members shall be entitled to receive compensation at a rate of $100 per diem, including traveltime, and while away from their homes or regular places of business they may be allowed travel expenses, including per diem in lieu of subsistence, as authorized by section 5703 of title 5, United States Code, for persons in the Government service employed intermittently.

(i) Resource plans and permits, contracts, and other instruments for the use and occupancy of National Forest System lands shall be consistent with the land management plans. Those resource plans and permits, contracts, and other such instruments currently in existence shall be revised as soon as practicable to be made consistent with such plans. When land management plans are revised, resource plans and permits, contracts, and other instruments, when necessary, shall be revised as soon as practicable. Any revision in present or future permits, contracts, and other instruments made pursuant to this section shall be subject to valid existing rights.

(j) Land management plans and revisions shall become effective thirty days after completion of public participation and publication of notification by the Secretary as required under section 6(d) of this Act.

(k) In developing land management plans pursuant to this Act, the Secretary shall identify lands within the management area which are not suited for timber production, considering physical, economic, and other pertinent factors to the extent feasible, as determined by the Secretary, and shall assure that, except for salvage sales or sales necessitated to protect other multiple-use values, no timber harvesting shall occur on such lands for a period of 10 years. Lands once identified as unsuitable for timber production shall continue to be treated for reforestation purposes, particularly with regard to the protection of other multiple-use values. The Secretary shall review his decision to classify these lands as not suited for timber production at least every 10 years and shall return these lands to timber production whenever he determines that conditions have changed so that they have become suitable for timber production.

(l) The Secretary shall—

(1) formulate and implement, as soon as practicable, a process for estimating long-terms costs and benefits to support the program evaluation requirements of this Act. This process shall include requirements to provide information on a representative sample basis of estimated expenditures associated with the reforestation, timber stand improvement, and sale of timber from the National Forest System and shall provide a comparison of these expenditures to the return to the Government resulting from the sale of timber; and

(2) include a summary of data and findings resulting from these estimates as a part of the annual report required pursuant to section 8(c) of this Act, including an identification on a representative sample basis of those advertised timber sales made below the estimated expenditures for such timber as determined by the above cost process; and

(m) The Secretary shall establish—

(1) standards to insure that, prior to harvest, stands of trees throughout the National Forest System shall generally have reached the culmination of mean annual increment of growth (calculated on the basis of cubic measurement or other methods of calculation at the discretion of the Secretary): *Provided*, That these standards shall not preclude the use of sound silvicultural practices, such as thinning or other stand improvement measures: *Provided further*, That these standards shall not preclude the Secretary from salvage or sanitation harvesting of timber stands which are substantially damaged by fire, windthrow or other catastrophe, or which are in imminent danger from insect or disease attack; and

(2) exceptions to these standards for the harvest of particular species of trees in management units after consideration has been given to the multiple uses of the forest including, but not limited to, recreation, wildlife habitat, and range and after completion of public participation processes utilizing the procedures of subsection (d) of this section. (16 U.S.C. 1604)

Sec. 7. Cooperation in Resource Planning.—The Secretary of Agriculture may utilize the Assessment, resource surveys, and Program prepared pursuant to this Act to assist States and other organizations in proposing the planning for the protection, use, and management of renewable resources on non-Federal land. (16 U.S.C. 1605)

Sec. 8. National Participation.—(a) On the date Congress first convenes in 1976 and thereafter following each updating of the Assessment and the Program, the President shall transmit to the Speaker of the House of Representatives and the President of the Senate, when Congress convenes, the Assessment as set forth in section 3 of this Act and the Program as set forth in section 4 of this Act, together with a detailed Statement of Policy intended to be used in framing budget requests by that Administration for Forest Service activities for the five- or ten-year program period beginning during the term of such Congress for such further action deemed appropriate by the Congress. Following the transmission of such Assessment, Program, and Statement of Policy, the President shall, subject to other actions of the Congress, carry out programs already established by law in accordance with such Statement of Policy or any subsequent amendment or modification thereof approved by the Congress, unless, before the end of the first period of ninety calendar days of continuous session of Congress after the date on which the President of the Senate and the Speaker of the House are recipients of the transmission of such Assessment, Program, and Statement of Policy, either House adopts a resolution reported by the appropriate committee of jurisdiction disapproving the Statement of Policy. For the purpose of this subsection, the continuity of a session shall be deemed to be broken only by an adjournment sine die, and the days on which either House is not in session because of an adjournment of more than three days to a day certain shall be excluded in the computation of the sixty-day period. Notwithstanding any other provision of this Act, Congress may revise or modify the Statement of Policy transmitted by the President, and the revised or modified Statement of Policy shall be used in framing budget requests.

(b) Commencing with the fiscal budget for the year ending September 30, 1977, requests presented by the President to the Congress governing Forest Service activities shall express in qualitative and quantitative terms the extent to which the programs and policies projected under the budget meet the policies approved by the Congress in accordance with subsec-

tion (a) of this section. In any case in which such budget so presented recommends a course which fails to meet the policies so established, the President shall specifically set forth the reason or reasons for requesting the Congress to approve the lesser programs or policies presented. Amounts appropriated to carry out the policies approved in accordance with subsection (a) of this section shall be expended in accordance with the Congressional Budget and Impoundment Control Act of 1974, Public Law 93-344.

(c) For the purpose of providing information that will aid Congress in its oversight responsibilities and improve the accountability of agency expenditures and activities, the Secretary of Agriculture shall prepare an annual report which evaluates the component elements of the Program required to be prepared by section 3 of this Act which shall be furnished to the Congress at the time of submission of the annual fiscal budget commencing with the third fiscal year after the enactment of this Act. With regard to the research component of the program, the report shall include, but not be limited to, a description of the status of major research programs, significant findings, and how these findings will be applied in National Forest System management and in cooperative State and private Forest Service programs. With regard to the cooperative forestry assistance part of the Program, the report shall include, but not be limited to, a description of the status, accomplishments, needs, and work backlogs for the programs and activities conducted under the Cooperative Forestry Assistance Act of 1978.

(d) These annual evaluation reports shall set forth progress in implementing the Program required to be prepared by section 3 of this Act, together with accomplishments of the Program as they relate to the objectives of the Assessment. Objectives should be set forth in qualitative and quantitative terms and accomplishments should be reported accordingly. The report shall contain appropriate measurements of pertinent costs and benefits. The evaluation shall assess the balance between economic factors and environmental quality factors. Program benefits shall include, but not be limited to, environmental quality factors such as esthetics, public access, wildlife habitat, recreational and wilderness use, and economic factors such as the excess of cost savings over the value of foregone benefits and the rate of return on renewable resources.

(e) The reports shall indicate plans for implementing corrective action and recommendations for new legislation where warranted.

(f) The reports shall be structured for Congress in concise summary form with necessary detailed data in appendices. (16 U.S.C. 1606)

Sec. 9. National Forest System Program Elements.—The Secretary of Agriculture shall take such action as will assure that the development and administration of the renewable resources of the National Forest System are in full accord with the concepts for multiple use and sustained yield of products and services as set forth in the Multiple-Use Sustained-Yield Act of 1960. To further these concepts, the Congress hereby sets the year 2000 as the target year when the renewable resources of the National Forest System shall be in an operating posture whereby all backlogs of needed treatment for their restoration shall be reduced to a current basis and the major portion of planned intensive multiple-use sustained-yield management procedures shall be installed and operating on an environmentally-sound basis. The annual budget shall contain requests for funds for an orderly program to eliminate such backlogs: *Provided*, That when the Secretary finds that (1) the backlog of areas that will benefit by such treatment has been eliminated, (2) the cost of treating the remainder of such area exceeds the economic and environmental benefits to be secured from their treatment, or (3) the total supplies of the renewable resources of the United States are adequate to meet the future needs of the American people, the budget request for these elements of restoration may be adjusted accordingly. (16 U.S.C. 1607)

Sec. 10. Transportation System.—(a) The Congress declares that the installation of a proper system of transportation to service the National Forest System, as is provided for in Public Law 88-657, the Act of October 13, 1964 (16 U.S.C. 532-538), shall be carried forward in time to meet anticipated needs on an economical and environmentally sound basis, and the method chosen for financing the construction and maintenance of the transportation system should be such as to enhance local, regional, and national benefits.

Provided, That limitations on the level of obligations for construction of forest roads by timber purchasers shall be established in annual appropriation Acts.

(Italics show an 1981 amendment.)

(b) Unless the necessity for a permanent road is set forth in the forest development road system plan, any road constructed on land of the National Forest System in connection with a timber contract or other permit or lease shall be designed with the goal of reestablishing vegetative cover on the roadway and areas where the vegetative cover has been disturbed by the construction of the road, within ten years after the termination of the contract, permit, or lease either through artificial or natural means. Such action shall be taken unless it is later determined that the road is needed for use as a part of the National Forest Transportation System.

(c) Roads constructed on National Forest System lands shall be designed to standards appropriate for the intended uses, considering safety, cost of transportation, and impacts on land and resources. (16 U.S.C. 1608)

Sec. 11. (a) National Forest System Defined.—Congress declares that the National Forest System consists of units of federally owned forest, range, and related lands throughout the United States and its territories, united into a nationally significant system dedicated to the long-term benefit for present and future generations, and that it is the purpose of this section to include all such areas into one integral system. The "National Forest System" shall include all national forest lands reserved or withdrawn from the public domain of the United States, all national forest lands acquired through purchase, exchange, donation, or other means, the national grasslands and land utilization projects administered under title III of the Bankhead-Jones Farm Tenant Act (50 Stat. 525, 7 U.S.C. 1010-1012), and other lands, waters, or interests therein which are administered by the Forest Service or are designated for ad-

ministration through the Forest Service as a part of the system. Notwithstanding the provisions of the Act of June 4, 1897 (30 Stat. 34; 16 U.S.C. 473), no land now or hereafter reserved or withdrawn from the public domain as national forests pursuant to the Act of March 3, 1891 (26 Stat. 1103; 16 U.S.C. 471), or any act supplementary to and amendatory thereof, shall be returned to the public domain except by an act of Congress.

(b) The on-the-ground field offices, field supervisory offices, and regional offices of the Forest Service shall be so situated as to provide the optimum level of convenient, useful services to the public, giving priority to the maintenance and location of facilities in rural areas and towns near the national forest and Forest Service program locations in accordance with the standards in section 901(b) of the Act of November 30, 1970 (84 Stat. 1383), as amended. (16 U.S.C. 1609)

Sec. 12. Renewable Resources.—In carrying out this Act, the Secretary of Agriculture shall utilize information and data available from other Federal, State, and private organizations and shall avoid duplication and overlap of resource assessment and program planning efforts of other Federal agencies. The term "renewable resources" shall be construed to involve those matters within the scope of responsibilities and authorities of the Forest Service on the date of this Act and on the date of enactment of any legislation amendatory or supplementary thereto. (16 U.S.C. 1610)

Sec. 13. Limitations on Timber Removal.—(a) The Secretary of Agriculture shall limit the sale of timber from each national forest to a quantity equal to or less than a quantity which can be removed from such forest annually in perpetuity on a sustained-yield basis: *Provided*, That, in order to meet overall multiple-use objectives, the Secretary may establish an allowable sale quantity for any decade which departs from the projected long-term average sale quantity that would otherwise be established: *Provided further*, That any such planned departure must be consistent with the multiple-use management objectives of the land management plan. Plans for variations in the allowable sale quantity must be made with public participation as required by section 6(d) of this Act. In addition, within any decade, the Secretary may sell a quantity in excess of the annual allowable sale quantity established pursuant to this section in the case of any national forest so long as the average sale quantities of timber from such national forest over the decade covered by the plan do not exceed such quantity limitation. In those cases where a forest has less than two hundred thousand acres of commercial forest land, the Secretary may use two or more forests for purposes of determining the sustained yield.

(b) Nothing in subsection (a) of this section shall prohibit the Secretary from salvage or sanitation harvesting of timber stands which are substantially damaged by fire, windthrow, or other catastrophe, or which are in imminent danger from insect or disease attack. The Secretary may either substitute such timber for timber that would otherwise be sold under the plan or, if not feasible, sell such timber over and above the plan volume. (16 U.S.C. 1611)

Sec. 14. Public Participation and Advisory Boards.—(a) In exercising his authorities under this Act and other laws applicable to the Forest Service, the Secretary, by regulation, shall establish procedures, including public hearings where appropriate, to give the Federal, State, and local governments and the public adequate notice and an opportunity to comment upon the formulation of standards, criteria, and guidelines applicable to Forest Service programs.

(b) In providing for public participation in the planning for and management of the National Forest System, the Secretary, pursuant to the Federal Advisory Committee Act (86 Stat. 770) and other applicable law, shall establish and consult such advisory boards as he deems necessary to secure full information and advice on the execution of his responsibilities. The membership of such boards shall be representative of a cross section of groups interested in the planning for and management of the National Forest System and the various types of use and enjoyment of the lands thereof. (16 U.S.C. 1612)

Sec. 15. Regulations.—The Secretary of Agriculture shall prescribe such regulations as he determines necessary and desirable to carry out the provisions of this Act. (16 U.S.C. 1613)

Sec. 16. Severability.—If any provision of this Act or the application thereof to any person or circumstances is held invalid, the validity of the remainder of the Act and of the application of such provision to other persons and circumstances shall not be affected thereby. (16 U.S.C. 1614)

Appendix B:

Planning Process for the 1985 Program

Planning--In Perspective and Practice

Resources Planning Act

The Forest and Rangeland Renewable Resources Planning Act of 1974 (P.L. 93-378), as amended, directs the Secretary of Agriculture to periodically assess the status of the Nation's forest and range land resources and to recommend a Forest Service program for management and use of these resources. It requires the development of an Assessment every 10 years and a Recommended Program every 5 years. The 1985 RPA Program is the third prepared under this legislation.

RPA Assessment

The RPA Assessment describes the Nation's renewable resource situation at a specific time and projects future supplies of and demands for these resources. The most recent Assessment was completed in 1979 and a supplement to the Assessment has been prepared to account for significant changes that have occurred since 1979. It shows that, in the years ahead, demands for resources produced from forest and range lands will increase more rapidly than supplies assuming that commercial timberland owners continue to respond to price and inventory changes and manage their timber stands much as they have in the recent past. However, the Assessment also identifies major opportunities to increase future supplies of almost all renewable resources.

RPA Program

The RPA Program recommends courses of action, based on the findings of the Assessment, for the management and administration of the National Forest System, for Forest Service Research, and for assistance to State forestry organizations and other cooperators through State and Private Forestry activities. The 1985 Program charts a course for the Forest Service through 2030.

Levels of Planning

The Resources Planning Act, as amended, and its implementing regulations require the Forest Service to have a three-level integrated planning process:

National: RPA Assessment and Program

Regional: Regional Guide

Local: National Forest Land and Resource Management Plans

In addition, State forest resource plans, developed by the States for State and private land, and Research plans are integral parts of the total planning process.

The planning process is a continuous cycle and each part has a special relationship to the others: the RPA Assessment is revised every 10 years; the RPA Program is revised every 5 years; and National Forest plans are revised at least every 15 years.

When the national RPA Program is completed, the Chief of the Forest Service distributes it to each Forest Service Region, Station, and Area. This information is reflected in Regional Guides, Research plans, and in State and Private Forestry (S&PF) planning.

Regional Guides to implement the 1980 RPA Program have been prepared. The Regional Guides: (1) distribute each Region's portion of the RPA Program among the National Forests and describe S&PF and Research programs; (2) provide direction for National Forest plans; and (3) develop the standards and guidelines for the management of the National Forests. It should be noted that National Forest plans are not limited by the RPA Program. They include one or more alternatives that meet both the output targets from the most recent RPA Program and the long-term goals in the President's Statement of Policy which is sent to Congress with the Program. The selected alternative for a particular National Forest may vary from the RPA targets but the National Forest plans within a Region, in aggregate, provide short- and long-term capabilities to meet or exceed the Region's assigned RPA targets.

The National Forest and State plans play an important role in shaping the RPA Assessment and Program. By collecting and integrating basic data on biological potential, examining management alternatives, and identifying research problems, local plans become the basic building blocks for regional and national planning. The emphasis at all planning levels is on the future and how forest and range land resources can best be used and managed to meet people's needs.

Planning Process

The preparation of the RPA Program complied with the requirements of the Resources Planning Act as amended, and Forest Service manual direction. Draft and final Environmental Impact Statements for the Program were prepared according to National Environmental Policy Act (NEPA) procedures. To the extent possible, a single process met planning and NEPA requirements. The actions described below were performed in this sequence; they may have occurred simultaneously and required repetition as additional information became available. Figure 1 displays the overall process.

Identification of Purpose and Need

The RPA Program is required every 5 years. In preparation for this, the Forest Service reviewed the current RPA Program, annual reports, and the Assessment. This review also considered public issues, management concerns, and resource use and management opportunities, and the planning efforts of other Federal agencies. This process resulted in the identification of needs and opportunities for management goals that the agency will strive to achieve, and issues that were addressed in the planning process.

Planning Criteria

Criteria were prepared to guide the planning process. Criteria applied to the design, formulation, and analysis of alternatives, and to the collection, structure, and use of inventory data and information.

Inventory Data and Information

The specific requirements for the type, kinds, and amount of information appropriate to the Program are found in the RPA Technical Field Guide. Appendix D discusses its content in more detail. Data and information needs varied as planning decisions developed from new issues, concerns, and management opportunities.

A primary source of information for the NFS portion of 1985 Program was the Regional data derived from available National Forest plans. All National Forests are currently preparing land and resource management plans. Regions used this information as it became available to respond to RPA data requirements

Similarly, information for the S&PF portion of the Program was based on the best available State forest resource planning data being developed by States for State and private forest lands. Most States completed first generation State forest resource plans by October 1984. The States used this in information to respond to requests by the Regions or the Northeastern Area to meet RPA data requirements.

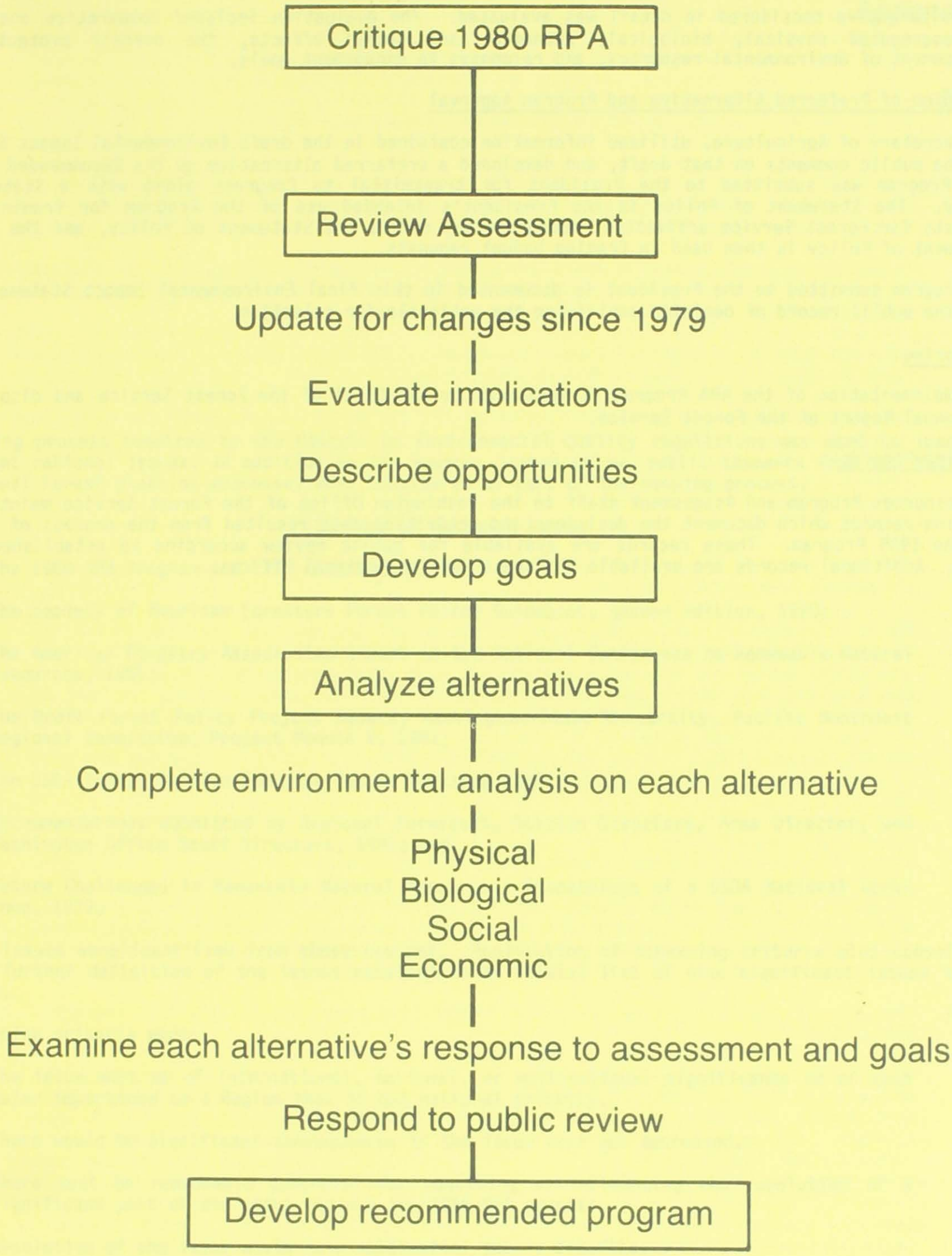
Data and information used to determine Research needs for the Program were developed from a series of special studies conducted by the Forest Service. Information on research needs was also gained from special task force studies and advisory groups.

Formulation of Alternatives

The RPA data base consisted of an array of alternatives developed by and specific to each Region and Station. Appendix D and the RPA Technical Field Guide explain this in more detail. From this data base, alternatives were formulated according to NEPA procedures and planning requirements.

Figure 1

1985 RPA Program Development Process



Estimated Effects of Alternatives

The physical, biological, economic, and social effects of implementing each alternative considered in detail were estimated, analyzed, and compared according to NEPA procedures.

Evaluation of Alternatives

Each alternative considered in detail was evaluated. The evaluation included comparative analyses of the aggregated physical, biological, economic, and social effects, the overall protection and enhancement of environmental resources, and responses to management goals.

Selection of Preferred Alternative and Program Approval

The Secretary of Agriculture, utilized information contained in the draft Environmental Impact Statement and the public comments on that draft, and developed a preferred alternative as the Recommended Program. This Program was submitted to the President for transmittal to Congress along with a Statement of Policy. The Statement of Policy is the President's intended use of the Program for framing budget requests for Forest Service activities. Congress may modify the Statement of Policy, and the modified Statement of Policy is then used in framing budget requests.

The Program submitted to the President is documented in this final Environmental Impact Statement along with the public record of decision explaining the rationale for selection.

Monitoring

The implementation of the RPA Program is monitored by the Chief of the Forest Service and displayed in the Annual Report of the Forest Service.

Planning Records

The Resources Program and Assessment staff in the Washington Office of the Forest Service maintains the planning records which document the decisions and activities that resulted from the process of developing the 1985 Program. These records are available for public review according to established procedures. Additional records are available at Forest Service Regional Offices.

Appendix C:

Issues

The scoping process required by the Council on Environmental Quality regulations was used to identify significant national issues. In addition to the sources listed below, public comments from the Regional and National Forest planning processes were considered as part of the scoping process.

Sources of National Issues

The 1980 RPA Program and 1979 Assessment;

The Society of American Foresters Forest Policy Guidebook, second edition, 1980;

The American Forestry Association Report on the National Conference on Renewable Natural Resources, 1981;

The Draft Forest Policy Project Report, Washington State University, Pacific Northwest Regional Commission, Project Module V, 1981;

The USDA Forest Service Emerging Issues Workshop, 1981;

Recommendations submitted by Regional Foresters, Station Directors, Area Director, and Washington Office Staff Directors, 1981; and

Future Challenges in Renewable Natural Resources; Proceedings of a USDA National Workshop, 1979.

Over 400 issues were identified from these sources. Application of screening criteria plus consolidation and further definition of the issues resulted in an initial list of nine significant issues to be addressed.

The screening criteria were:

The issue must be of international, national, or multiregional significance or of such major importance to a Region that it had national priority.

There would be significant consequences if the issue were not addressed.

There must be reasonable potential for resolving or influencing the resolution of a significant part of the issue through the 1985 RPA process.

Resolution of the issue would have substantial public benefits.

The issue related to the major items covered in section 219-10 of the National Forest Management Act regulations.

The significant issues are listed below, along with a brief discussion of the situation or circumstances surrounding them.

1. How can the National Forests contribute to meeting the increased demand for mineral and energy development?

   Considerable untapped mineral and energy resources underlie National Forest System (NFS) lands. There has been a rapid increase in prospecting, exploration, and development on these lands. There is growing concern about restrictions placed on NFS lands for exploration and development of nonrenewable resources. There is also concern about the potential impacts on currently classified areas when mineral exploration and development activities occur. Increasing mineral and energy exploration and development in certain designated areas, such as, wilderness, wilderness study areas, or wild and scenic rivers may result in conflicts with the primary purpose for which these areas were designated.

2. What are the trade offs of Federal rangeland producing at less than biological potential under improved management?

   Present forage production is about 50 percent of potential. Rangeland can support more grazing use over time if the condition of rangelands is improved and range management programs implemented.

3. Can the supply of outdoor recreation opportunities from public forest and range lands be expanded in response to projected demand?

   Substantial growth in outdoor recreation participation is projected for the Nation's forest and range lands. If adequate supplies are to be ensured, expansion of the recreation opportunities is necessary. Without a sufficient increase in supply, limitations on outdoor recreation opportunities will constrain future participation and could lead to degradation of both the physical resource and the recreation experience.

4. How much National Forest land should be recommended for inclusion in the National Wilderness Preservation System?

   There is continuing public concern as to the amount and specific location of National Forest lands to be added to the National Wilderness Preservation System. Congressional action has not been completed on some areas recommended for wilderness in the Roadless Area Review and Evaluation (RARE II). All areas reviewed in RARE II that have not been subject to Congressional action are currently being re-evaluated for their wilderness potential in individual National Forest land and resource management plans. RARE II areas recommended for further planning by Congress are also being considered in individual National Forest plans for wilderness inclusion.

5. What are the local and national implications of National Forests implementing departures from nondeclining yields? What are the values and costs of retaining significant volumes of old-growth timber on the National Forest?

   Substantial volumes of old-growth timber exist on the National Forests in the West. Accelerated harvest of these stands can increase short-term softwood supplies. However, the implications of potential long-term decreases in harvests and impacts on the environment make this course of action unpopular to some.

6. What are the implications of commercial forest land producing at less than biologic potential?

   Timber productivity, on the average, is about 60 percent of the potential for unmanaged stands on commercial forest land in all ownerships. The gap between current growth per acre and potential growth per acre on managed stands, is even greater. The main factors are: not enough desirable trees on productive lands; mortality and growth losses; reforestation problems; the presence of brush and cull trees; and the lack of thinning to provide room for growth. Particular concern is raised for the lack of investment in reforestation in the Southeastern U.S. and the lack of incentives, capital, and technical knowledge by and for private nonindustrial land owners nationwide. The effects of using intensive management practices and various protection techniques must be more carefully considered.

7. What are the benefits of improved utilization of current wood resources to extend the timber supply?

Large volumes of salvable timber have potential for use. For example, in 1977 an estimated 14 billion cubic feet of salvable dead timber was inventoried in western softwood stands. A significant volume of wood is not used annually during conversion from tree to log to product. In 1976 this volume was estimated to be 547 million cubic feet. Improved processing in the woods and at the mill would provide a substantial extension of the resource over the short term. In addition, substantial volumes of fiber left as logging residues or urban wood waste is usable for pulp or fuel.

8. What are the implications of changes in wildlife and fish habitat relative to other uses?

The future of wildlife and fish resources depends directly on the quantity and quality of available habitat. These changes vary by species and location. The greatest concern is the conversion of land to less desirable wildlife and fish habitat.

9. How will the implications of production of nonmarket forest and range resources be incorporated, particularly in terms of economic analyses?

There is public concern that certain forest and range land resources will receive reduced attention if they do not produce a direct return to Federal, State, or local treasuries. The general feeling is that competing demands on public budgets at all levels of government could adversely affect the protection and management of nonmarket resources. Examples of nonmarket resources include landscapes, cultural sites, fish, wildlife, water, and recreation.

Appendix D:

Data Base Development

Background

The Technical Field Guide (TFG) is the primary reference source for building and analyzing the data used in the development of the 1985 RPA Program. The TFG reflects the experience the Forest Service gained during preparation of the 1975 and 1980 RPA Programs and responds to critiques received from various publics. These comments and experiences prompted the following actions:

Data for the 1985 RPA was based on National Forest land management planning (LMP), State Forest resource plans, and Research planning.

Region, Area, and Station responsibilities for development and validation of the data base were greatly increased.

The amount of data required at the national level was reduced by nearly one-third.

The data base and analyses described in the TFG was based on the development of whole Regional alternatives as opposed to separate resource-by-resource evaluations.

The data base described in the TFG was closely coordinated with the Forest Service annual budget process. Terminology was standardized. The data developed for the RPA 1985 Recommended Program will be used as the basis for developing annual budget alternatives for FYs 1986-1990.

The TFG was closely coordinated with both the Field and WO Staff of the Forest Service. A special effort was made to coordinate with National Forest planning. Key parts of the TFG were field-tested in Regions 1 and 9 to determine data availability, adequacy of the process, and to improve efficiency.

Additional training and direct assistance in the use of the TFG was made available to field units.

New tools were available for producing reports, various combinations of information, and graphic displays of information.

Development of National Alternatives

Data developed for regional alternatives were the source of the national data base. The process used by each Region, Area, and Station to develop RPA alternatives was based on national direction; Regional data bases were built from the range of National Forest, State and Research planning alternatives. Each national alternative for RPA is the sum of the corresponding alternatives from each Region, Area, and Station.

These field alternatives formed the information base for building national alternatives. For the first time, National Forest planning information, including resource capability and resource interactions, was used as the basis for developing the National Forest System (NFS) Regional alternatives. Where available, forests converted their LMP alternatives to the appropriate RPA/Advent data structure. Similarly, the State Forest resource planning data was used to develop some of the State and Private Forestry (S&PF) Regional/Area alternatives. S&PF alternatives were coordinated with NFS alternatives by the Regional Foresters and the Area Director. Research alternatives, using Station data, were built and coordinated with S&PF and NFS data in the WO. The NFS and S&PF alternatives were validated and analyzed at the Regional and Area offices. Stations developed data which were analyzed and converted into alternatives by WO Research staff.

The Regional Foresters, Area Director, and WO Research staff were responsible for ensuring that alternatives were realistic and implementable. As they prepared each alternative the following criteria were considered:

National Forest and State Resource planning alternatives included in Regional and Area alternatives provided a realistic and achievable transition from current program and budget levels.

Alternatives reflected rational, professional judgment.

Alternatives considered policies regarding increased productivity.

Alternatives were realistic in terms of workforce and contracting capabilities.

Alternatives were sensitive to the need for key investments that were the basis for future outputs; e.g., reforestation, habitat improvements.

Alternatives were based on sound economic, social, and biological management principles with special attention given to the area of new capital investments versus operation and maintenance costs.

Regional Data Development Strategies

In developing the 1985 RPA data base, WO staffs worked closely with the Regions to examine costs and output levels. Generally, the following process was used:

The National Forests submitted forest data to their Regional Office by outputs and costs for key years (decades, usually) for an entire alternative or benchmark. National Forest land management planning was in various stages of completion at the time the alternatives were developed. Therefore, some Regions had many plans in draft status compared to others who had virtually no completed drafts. Consequently, National Forest planning information that was completed through the analysis of the management situation was used to develop alternatives.

National Forest plan costs and outputs were delineated using a computer program to assign costs and outputs based on National Forest plan modeling and analyses. Subsequently, Forest Supervisors reviewed the data to verify that it represented National Forest planning information.

The Regional alternatives were developed by combining data from National Forest alternatives that most closely corresponded to the RPA alternative. At the Regional level, a series of reports were produced, reviewed, and modified when changes were deemed appropriate. After adjustments were made to the Regional data base, the information was converted from the time format in decades into the RPA time points in order to provide a transition from 1982 budget levels.

For a more comprehensive review of the data base development process, refer to the Technical Field Guide. The Regions' specific comments on how they developed the data base are available in each Regional Office.

Validation and Analysis

Data validation was required to verify the accuracy of information prior to analysis. Preliminary validation was completed by field units. Primary validation examined cost per unit, level of outputs, total costs, relationship to current output, and trend or deviation from past levels.

Using a set of analysis factors, field units analyzed each alternative and the major components of alternatives. This analysis helped to evaluate and compare management proposals. Both Regional and the

national alternatives were analyzed, with the field units validating key outputs and costs, when developing alternatives in response to national goals. Regions also analyzed alternatives for environmental effects using analysis factors that were developed by the RPA interdisciplinary team. These factors included economic efficiency, returns to U.S. Treasury, returns to States, consumer benefit, timber price, regional income and employment, community and social effects, long-term soil productivity, water quality, visual quality, and wildlife habitat capability.

Appendix E:

Analytical Processes

Decisionmaking associated with the Nation's 1.6 billion acres of forest and range lands is complicated by competition for resources from a limited land base and by considerations of environmental and social effects. Some approaches to resource production can satisfy demands more efficiently than others. Congress has directed that multiple-use principles be used in natural resource management on NFS lands.

Multiple-use management adds to the complexity of decisionmaking: what level of investments and outputs, and what management alternatives should be used to meet the Nation's demands for natural resources? The problem is further complicated by difficulties in integrating management plans for State and private lands with those for Federal lands.

This RPA final Environmental Impact Statement displays a set of alternatives and presents an analysis of the differences among them that facilitated selection of a Recommended Program. The decisionmakers considered costs, outputs, and environmental effects associated with the various resource combinations.[1] Several models were used to help analyze cost-effectiveness of resource allocations, employment and earnings effects, community and social effects, environmental effects, and resource interactions.

The models described below were used to analyze alternatives.

Program Planning Model (ADVENT)

The ADVENT II data base and analysis system[2] was used to store and display data for validation, and to aid in economic analyses. Data consist of activities, costs, and outputs developed at the National Forest, State, and Research Station level, and aggregated to the national level for analysis purposes. Validating data consisted of correcting entries, checking project codes against definitions, and verifying data aggregations. A set of interrelated resource activities make up an alternative. The ADVENT system contains software programs to edit data; build data bases; prepare reports and graphs; provide linear, goal, and integer programing capability; consolidate data bases; and perform other functions such as scaling, sensitivity analysis, and calculating present net value and cost effectiveness.

Regional Employment and Earnings Model (IMPLAN)

An employment and earnings model estimated regional economic effects of alternatives by taking into account: (1) interrelationships among industries within different regions of the country, (2) the imp-

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[1]Several standards were identified to help judge and/or compare management proposals. They include: economic efficiency; returns to U.S. Treasury; returns to States; consumers' benefit; timber price effects; regional earnings and employment; community and social effects; long-term soil productivity; water quality; visual quality; and wildlife habitat capability. These are discussed in chapter 4.

[2]Advent--A User's Guide, Fourth Edition. USDA Forest Service. November, 1978.

lications of increased regional household incomes, and (3) the resulting composition of expenditures by the regions' households. This model is known as IMPLAN[3] and is based on input-output analyses.

Input-output analyses relate production and consumption sectors of the economy. Industries purchase goods or raw materials (input) to produce items to sell (ouput) to other industries or to consumers. Thus a set of input-output accounts depicts the structure of an economy. Flows of goods and services show linkages among industries in the economy. In the IMPLAN model these flows are transformed into equations to aid in the assessment of regional employment and income effects.

Social and Community Impact Models

The interactions among present and future resource uses and society are as complex as those among resources themselves. Social and community impact models estimate effects of alternatives on life-styles, attitudes, beliefs, values, social organization, and population and land use patterns.[4] Lifestyles identify the ways people live, including their patterns of work and leisure, customs and traditions, and relationships with family, friends, and others. Attitudes, beliefs, and values are reflected in the ways people regard the management and use of particular National Forests. Social organization relates to the way people cooperate to meet their needs. Population and land-use patterns refer to existing types and intensity of uses, and spatial distribution of land characteristics and uses.

Forest Planning Model (FORPLAN)

Regional and Area alternatives for the 1985 RPA Program were formulated from data bases developed from National Forest and State forest resource planning data.

In the planning process, the National Forests and Grasslands are divided into analysis areas of similar characteristics such as vegetation type, soil, and slope. Management prescriptions, a coordinated set of management practices to meet certain objectives, are then developed for the analysis areas. The practices vary from no activity to intensive activities, depending on the objectives. Prescriptions are quantified by activity levels, costs and expected resource outputs and benefits.

FORPLAN is a linear programing model developed for analysis of National Forest planning alternatives. Based on the objectives of each alternative, the optimum set of management prescriptions is selected and displayed for each analysis area. Examples of possible objectives include: meet demand for goods and services; cost efficiency; maximize present net value; maximize one resource output; improve habitat conditions; provide a nondeclining flow of timber; and reduce the budget. All alternatives meet legal requirements. Where alternatives for individual National Forests were available, they were used as the basic building blocks for national RPA alternatives.

Timber Assessment Market Model (TAMM)

The Timber Assessment Market Model estimates price changes resulting from projected softwood timber harvest levels. Total stumpage demand for a given supply region is determined from the sum of softwood lumber, plywood, pulpwood, miscellaneous products, fuelwood, and log export demand. Stumpage supplies vary according to the assumptions in the alternatives. Price changes are estimated through analysis of the interaction between supply and demand.

Returns to U.S. Treasury Model

Returns to the U.S. Treasury are cash payments for goods and services from NFS lands. The model estimates anticipated receipts from sales, leases, royalties, permits, and fees for each national alternative. These receipts are generated by timber, minerals, recreation and grazing activities. TAMM is used to project future interregional timber prices and receipts. Mineral receipts are based on lease rental fees, bonus bid fees, royalty payments, and sales of common variety minerals. Recreation receipts are anticipated admission fees and special use fees. Range receipts are derived from current grazing fees.

Returns to States Model

Money that States receive is based on total returns to the U.S. Treasury. Twenty-five percent of gross receipts for NFS goods and services (except minerals) is used to estimate returns to States for each alternative. Returns to States from mineral activities vary, depending on the land (public domain or acquired) involved. Since the origin (by land type) of projected mineral outputs is not specified, projected returns to States for minerals are not calculated.

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[3]IMPLAN User's Manual. USDA Forest Service. August, 1982

[4]Social Impact Analysis Handbook, FSH 1909.17. USDA Forest Service. July 27, 1983.

Consumers' Benefit Model

This model is used to show the distribution of benefits for each alternative to purchasers or users. For many National Forest resource outputs, there may be a difference between the price or fee a consumer pays and the market price. For this analysis, consumers' benefit is determined by calculating the difference between total benefits (which includes both market and simulated market prices for outputs) and total Returns to the U.S. Treasury for a given time period. See table 2.41 and appendix F for more details.

Soil Productivity and Water Quality Model

Long-term soil productivity and water quality have been evaluated by Region for each alternative. Key management activities, such as, road construction, timber harvest, and range improvement, were selected and acreages affected by each activity were estimated. While all of these activities disturb the soil, the potential for beneficial or adverse effects varies. For example, reforestation, nonstructural range and wildlife improvement, and watershed improvement all have potentially beneficial effects. On the other hand, timber sale preparation, fire breaks, mineral development, and road construction all have potentially adverse effects.

Neither long-term soil productivity nor water quality are below legal standards in any alternative. However, by comparing the total acreage and types of soil disturbance against the current levels (1986), a judgment can be made as to the relative potential for adversely affecting soil productivity and water quality in each alternative.

Visual Quality Model

Each Regional visual quality model describes the number of acres in each visual resource management category. All National Forest lands are categorized according to the amount of public concern for scenic quality and the diversity of natural features. This is done by comparison to measurable standards or objectives.[5] The visual quality objectives are: preservation, retention, partial retention, modification, and maximum modification. Except for preservation, each describes a different degree of alteration of the natural landscape based upon the importance of esthetics. The degree of alteration is measured in terms of visual contrast with the surrounding natural landscape. The acres in each category are shown by alternative.

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[5]National Forest Landscape Management; Volume 2; Chapter 1: The Visual Management System. USDA Forest Service Agricultural Handbook 462.

Appendix F:

Development of Benefit Values and Costs

INTRODUCTION

This appendix presents the rationale and techniques used to estimate resource output values for the economic analysis of the 1985 Resources Planning Act (RPA) Recommended Program. It displays the values used to calculate benefits and defines costs. It also explains how some of the values used to assess RPA alternatives in the Draft Environmental Impact Statement (DEIS) were modified in response to public comment and the effects of those modifications.

The evaluation of benefits from resource outputs requires a consistent concept of value, although value estimation techniques may vary between market and nonmarket resources. Definition of inputs, such as management activities and costs, must also be consistent for proper comparison of costs and benefits. The concepts used to define the benefits and costs of RPA alternatives are discussed in detail in later sections.

For the RPA analysis, market prices by National Forest System (NFS) Region were used as the measure of value for forest resource outputs. For some outputs, Forest Service resource or activity fees closely approximate a market price, as in the case of timber stumpage prices established by competitive bid. For other outputs, such as range forage, the fee charged may be less than the estimated market price because it is established by policy. For still other outputs, the Forest Service receives no fee. For resources where fees approximating market prices are not received, a market price for the output was estimated for the analysis.

Outputs must also be valued at a comparable point in the production process. Resources in RPA were valued before they left the forest. For example, timber was valued as standing timber or stumpage. The value added by harvesting or hauling was excluded. In a similar fashion, nonmarket outputs such as recreation visitor days (RVDs) were valued at the point of use on the forest. License fees or equipment costs were not included.

Present net value (PNV) was the primary criterion used to measure the economic worth of alternatives. For each alternative, PNV was the difference between the discounted value of all priced outputs and the discounted cost of Forest Service management and investments over the analysis period. The priced outputs were visitor or user days for wildlife, fishing, wilderness, and recreation experiences; animal-unit-months of forage; adopted wild horses and burros; timber stumpage; commercial fish; commercial animal pelts; increased waterflow and improved or maintained water quality; and minerals. The RPA Program also provides for protection of soil productivity and air quality, but these outputs were not priced for the analysis.

PNV converts all costs and benefits over the 50-year planning period to a common point in time. The PNV for each alternative can then be compared directly, even though the actual costs and benefits occur at different times among alternatives.

The analysis period was from 1986 to 2030. Some activities, such as reforestation and road building, may generate benefits beyond this period; therefore, estimates of benefits may be conservative. For

comparisons of alternatives, however, the differences in PNV would be small if benefits beyond 2030 were considered because of the long time period.

Similarly, investments made prior to 1986 were not considered, although many of the benefits re- ceived during the 1986-2030 period accrue to those investments. To simplify this analytical problem, the RPA analysis compared only the benefits received and the costs incurred during the planning period. Costs prior to 1986 and benefits after 2030 were not included. All costs and benefits were reported in 1982 dollars to remove the influence of inflation or deflation on values.

The analysis of the economic efficiency of alternatives using PNV is only one part of the total RPA process. The 1985 RPA Recommended Program was developed within the context of a number of objectives, including meeting environmental and legal requirements, reducing costs and enhancing revenues, maintaining or improving both the productivity of forest and range lands and environmental quality, and minimizing short-term disruptions to community stability.

Major Changes from the DEIS

Three major changes were made in the techniques used to estimate resource values between the DEIS and the Final Environmental Impact Statement (FEIS).

First, the trend in value over time was reconsidered for all resources. Only timber values showed an upward trend in the DEIS. In the FEIS, all values except water show an upward trend.

Second, the assumptions used to develop values for recreation, wilderness, and wildlife and fish from travel cost and contingent valuation studies were re-evaluated. The net result was an eight-percent reduction in the initial values for 1986.

Third, the Forest Service and the Bureau of Land Management, U.S. Department of Interior, have completed a study of grazing fees which included a fair market value appraisal of grazing on Federal rangelands. These appraised market values for range forage were substituted for the simulated market prices derived from the ranch budget analysis procedures used in the DEIS.

The effect of these changes on PNV was an increase of about 13 percent for each alternative. As Table 1 indicates, the ranking of alternatives by PNV remained the same, except that Alternative 9 and Alternative 4 shifted between third and fourth, primarily because of the higher minerals values.

Table 1.--National RPA Alternatives Ranked by Present Net Value

Rank:	1st	2nd	3rd	4th	5th	6th	7th	8th	9th
DEIS Values	Alt.7	Alt.3	Alt.4	Alt.9	Alt.6	Alt.8	Alt.2	Alt.1	Alt.5
FEIS Values	Alt.7	Alt.3	Alt.9	Alt.4	Alt.6	Alt.8	Alt.2	Alt.1	Alt.5

Program Costs

Program inputs, developed by Forest Service field units, were organized so that costs were associated with direct and indirect resource outputs. Program inputs consist of management activities and their costs. Management activities are actions, measures, or treatments which directly or indirectly produce, enhance, or maintain forest and range land outputs or which achieve administrative or environmental quality objectives. Management activities were categorized as either capital investment or operation/ maintenance.

Capital investment includes all the activities initially required to produce a measurable and complete output. It has identifiable starting and ending dates. It reflects the cost of developed structures, facilities, or improvements in natural resources used to produce outputs, generally over a number of years.

Operation/maintenance covers on-going activities to operate or maintain facilities, services, or resources.

All costs used in the RPA process were in constant dollars, with January 1, 1982 as the base.

Costs were organized so that they were associated with direct and indirect resource outputs of various programs. Three types of costs were recognized:

Direct costs which contribute to the production of primary outputs;

Resource coordination costs which are incurred to produce primary outputs in an environmentally acceptable way and/or to mitigate short-term impacts; and

Support costs which are needed to allow activities to continue. Examples are road and fire control costs. These costs can be classified as separable or joint. Separable costs can be assigned to the output of a specific resource. Joint costs serve multiple objectives and cannot be directly identified with the production of any specific output.

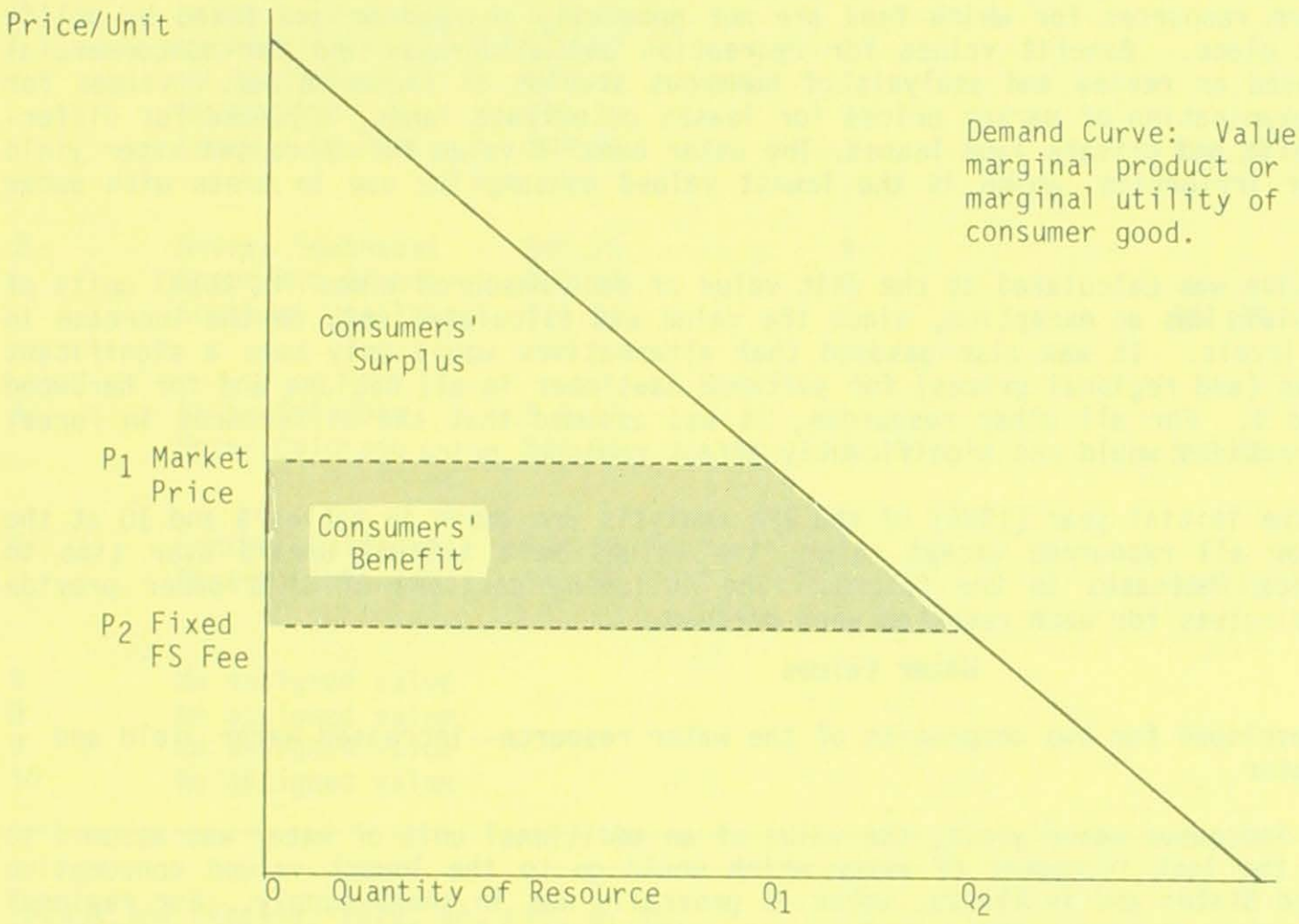
Program Benefits

Valuation of benefits for the RPA analysis required that a consistent concept of value be used for both market and nonmarket resource outputs.

Consumers' willingness to pay is well-documented in the professional literature as a conceptual basis for valuing benefits.[1] Total willingness to pay consists of direct expenditures (price paid for a unit of the resource times the quantity consumed) plus consumers' surplus. Consumers' surplus exists if the demand curve for the resource is downward sloping and the producer is not a discriminating monopolist. The downward slope of the demand curve indicates that consumers are willing to pay less and less for each additional unit of the resource consumed. Yet each unit is sold at the same price as the last unit produced. Consumers' surplus is incurred on all previous units.

Direct expenditures for a resource represent a transfer to the producer of part of the consumers' total willingness to pay. For some resources, the fee paid by the consumer is fixed administratively at less than what the price would be in a free, competitive market. The difference between the market price of an output and the actual fee that is collected for that output is defined as consumers' benefit. Figure 1 illustrates the concepts of total willingness to pay (the entire area under the demand curve for the resource quantity demanded), consumers' surplus (net willingness to pay) and consumers' benefit.

Figure 1.--RPA Benefit Value Concepts:
Total Willingness to Pay--Consumers' Surplus, and Consumers' Benefit



[1]Dwyer, J.F. Report of the 1980 RPA Evaluation Work Group. University of Illinois, unpublished manuscript. 1978.

Layard, Richard (editor). Cost-Benefit Analysis. Suffolk, England: Richard Clay, LTD. 1976.

Mishan, E.J. Cost-Benefit Analysis, New and Expanded Edition. Praeger Publishers. New York. 1976.

The values used in the RPA analysis were intended to represent actual or estimated market prices for resource outputs from each NFS Region. These values include consumers' benefit but not consumers' surplus. Estimated market price rather than total willingness to pay was selected as the measure of value for all resources for several reasons. Estimates of market prices were considered to be more reliable than estimates of willingness to pay because they could be based more closely on evidence from actual transactions. Market prices for timber from National Forest lands are well-established. Comparable values from market exchanges are readily available for some other resources as well, such as forage and minerals.

Using total willingness to pay as the measure of value would have required estimating consumers' surplus for all resources. There is some concern that the methods commonly used to estimate consumers' surplus tend to overstate the amount. Travel cost studies, for example, are frequently based on higher quality sites. In addition, estimates of consumers' surplus derived from a demand curve function may have an upward bias for statistical reasons.[2] There is also one argument that consumers' surplus is not a realistic measure of value to the consumer because, if it is summed over all the goods consumed by an individual, it usually exceeds total income. At the regional level of analysis used for the RPA Program, consumers' surplus probably does not represent a significant portion of the resource value. Consumer's surplus depends on a downward sloping demand curve, where changes in supply affect price. Yet, for all resource outputs except timber, it was assumed for the RPA analysis that differences among alternatives in the levels of outputs supplied from National Forests would not sufficiently affect total regional supplies to cause changes in price. Finally, market price provides a more useful measure of value than total willingness to pay for analyzing policy considerations other than economic efficiency, such as generating Treasury receipts and determining user fees.

Market prices were determined from actual exchanges in the market place for timber, commercial wildlife and fish, and minerals. The benefit value for timber activities was the market price for stumpage adjusted to a particular level of output. Commercial wildlife and fish values were based on market prices from which private production and transportation costs were subtracted to determine the value of fish and pelts in the forest. Rent and royalty returns for leasable minerals were used as benefit values for energy minerals. Rent and royalty fees for locatable (hardrock) minerals and for minerals under reserved and outstanding rights claims were based on rates charged on private lands, since the law prevents fees from being collected from these claims on public lands.

Market prices were estimated for recreation and wilderness, noncommercial wildlife and fish, forage, and water resources. These are resources for which fees are not generally charged or are fixed by policy rather than in the market place. Benefit values for recreation and wilderness and for noncommercial wildlife and fish were based on review and analysis of numerous studies of these values. Values for forage were derived from examination of market prices for leases on private lands, adjusted for differences in terms between public and private land leases. The water benefit value for increased water yield was the value of water for irrigation, which is the lowest valued consumptive use in areas with water shortages.

The value of each alternative was calculated as the unit value of each resource times its total units of output. Increased water yield was an exception, since the value was calculated only on the increase in water yield over current levels. It was also assumed that alternatives would only have a significant effect on regional supplies (and regional prices) for softwood sawtimber in all Regions and for hardwood sawtimber in Regions 8 and 9. For all other resources, it was assumed that the differences in Forest Service supply among alternatives would not significantly affect regional price.

The unit values used for the initial year (1986) of the RPA analysis are shown in tables 9 and 10 at the end of this appendix. For all resources except water, the values were indexed upward over time to reflect expected real price increases in the future. The following sections of this paper provide further details on how the values for each resource were derived.

Water Values

Values for the RPA were developed for two components of the water resource--increased water yield and the quality of existing water.

To determine the value of increased water yield, the value of an additional unit of water was assumed to be equal to the value of the last increment of water which would go to the lowest valued consumptive use. In the eastern United States and in Alaska, water is generally not in short supply. For regional level analysis, increased water yield for these Regions was assigned no value because water quantity is generally not a problem.

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[2]Bockstael, Nancy E. and Ivar E. Strand, Jr. Consumer Surplus Estimates. University of Maryland, draft paper. April 1985.

In the western United States where water is in short supply, irrigation is traditionally the lowest valued major consumptive use of water. If additional water is demanded for higher valued uses, it will eventually be purchased from irrigators, unless the cost of alternative supplies is less than the irrigation price.

Values for irrigation water in western Regions were developed from a study by Frank and Beattie.[3] This study estimated agricultural production functions from which the marginal product of water input was calculated. A ridge regression model calculated physical production functions for each of eleven major irrigation regions in the West, based on prevailing crop patterns. The model also generated water demand curves and values for: (1) the short run in which all inputs are fixed; (2) an intermediate run with land fixed; (3) an intermediate run with both land and machinery fixed; and (4) the long run in which all crop-related inputs are variable. The estimates of the value of water produced by the model were consistent with empirical observations and economic theory. For the RPA, the long-run values were used, since they best portray expected market behavior over time, including the practical necessity for irrigators to cover all costs over the long run.

The water values for irrigation regions were converted to values for increased water yield in NFS Regions by calculation of a weighted average value for each Region, as shown in Table 2.

Table 2.--Values of Water for Irrigation by NFS Region

NFS Region	Irrigation Region	Value per acre-foot[1] (1978 dollars)	Assigned Weight[2]	Regional Average Value per acre-foot (1978 dollars)	Regional Average Value per acre-foot (1982 dollars)
1	Upper Missouri	$ 9.77	-	$ 9.77	$13.50
2	Upper Colorado	$13.94	1		
	Upper Rio Grande	$30.57	1		
	NW Ogallala	$44.00	1		
	NE Ogallala	$28.39	1		
	Central Ogallala	$44.53	1	$32.29	$45.00
3	Desert Southwest	$40.75	2		
	Upper Rio Grande	$30.57	2		
	Southern Ogallala	$14.31	1	$31.39	$43.50
4	Snake-Columbia	$ 3.17	1		
	Upper Colorado	$13.94	1	$ 8.56	$12.00
5	Central California	$44.20	1		
	Desert Southwest	$40.75	1	$42.48	$59.00
6	No assigned value				
8	No assigned value				
9	No assigned value				
10	No assigned value				

[1]Frank and Beattie, 1979, op. cit. p. 95.

[2]Assigned weights were used to convert water values from irrigation regions to water yield values for Forest Service Regions.

[3]Frank, Michael D. and Bruce R. Beattie. The Economic Value of Irrigation Water in the Western United States: An Application of Ridge Regression. Technical Report No. 99, Texas A&M University. 1979.

These values were credited to the initial increase in water yields from Forest Service activities. They do not recognize return flows in the use of the water resource. Typically, a significant portion of the water withdrawn for offstream uses is not consumed but returns to water sources and is available for reuse. Since most information on water values is based on volumes withdrawn rather than volumes consumed, a multiplier is often applied to water values or volumes to account for intermediate uses before final consumption. For the RPA analysis, however, it was not practical to track the sources and intermediate users of new water within and between Regions. Therefore, the RPA values may be conservative. This should have little impact on overall evaluation since the volume of new water produced is quite low.

For the quality component of water, values were developed for improved water quality, maintained water quality, and sediment reduction in all Regions.

Values for the improvement and maintenance of water quality were derived from the weighted average value of water in municipal, industrial, and irrigation use for each Region. Ten percent of the average value of water in all uses was attributed to water quality. Only a percentage of this water quality value was counted as a benefit from Forest Service activities--seventy percent for investment projects to improve water quality and ten percent for quality maintenance programs. Unit values for sediment reduction were based on various projects and studies on sediment impact in different sections of the United States.

Unlike other resource values, water values were not assumed to change over time. In the West, where supplies of water are already limited, the major use of water is agriculture. Increased demand from this sector is not likely to occur, because there is already excess crop production capacity in agriculture and this condition is expected to continue.

Mineral Values

The Forest Service Minerals and Geology staff developed mineral values from established royalty and lease rates paid by producers to the Federal government. The U.S. Department of Interior administers most mineral leasing on public lands, including National Forests. The Forest Service manages the surface resources where mineral activities occur. Under the U.S. Mining Laws of 1872, as amended (17 Stat. 91), producers do not pay for locatable (hardrock) minerals and minerals under reserved and outstanding rights (R&OR) claims on NFS lands that were previously part of the public domain. Values for these outputs were developed from comparable royalty and lease rates for the same minerals under other ownerships and on aquired Federal lands. For leasable minerals, values were derived from U.S. Department of Interior data. For energy-related outputs, data from the U.S. Department of Energy were also used. Sale prices were used for common variety materials, such as sand and gravel, sold by the Forest Service.

Unit values for some energy-related minerals vary by Region because production of two or more commodities with different values is reported under one category. For example, oil and gas production is measured in billions of British thermal units (BBTUs). The value per BBTU is different for oil and gas and the production mix between the two commodities varies by Region. Therefore, the value per BBTU of oil and gas production combined varies by Region.

Expected price changes for oil, gas, geothermal energy, and uranium were estimated in a study done at Purdue University.[4] Overall, the Purdue study suggests a doubling of energy prices over the next fifty years. Nonenergy mineral prices will likely grow at a much slower rate, about 0.5 percent per year. The indices used for mineral values in the RPA analysis are shown below.

Table 3.--Indices for Mineral Values

Year	Oil	Gas	Coal	Uranium	Geothermal	Nonenergy
1986	100	100	100	100	100	100
2030	240	372	126	472	100	125

Range Forage Values

Values were assigned to two outputs from the range resource: animal-unit-months (AUMs) of forage leased under grazing permits; and adopted wild horses and burros.

[4]Backus, George A. Fossil 79--The Energy Transition Policy Model (1950-2030). Purdue University. 1981.

Wild horses and burros on NFS lands are managed and protected under the Wild Free-roaming Horse and Burro Act (P.L. 92-195). To relieve overpopulation, these animals may be captured by the Forest Service and made available for adoption. The adoption fee is set administratively, although it is periodically adjusted to facilitate adoption of the number of animals available. The 1982 horse adoption fee of $125 was considered to be an approximation of the market price and was used as the RPA value for horses and burros removed from NFS rangelands.

Animal-unit-months of forage on NFS lands are also not priced in a free, competitive market. AUMs are allocated under a permit system based largely on prior grazing use of federal lands before they were reserved for public use. Grazing fees have been set by a formula in the Public Rangelands Improvement Act (PRIA) of 1978 (P.L. 95-514). The PRIA required the Secretaries of Agriculture and Interior to recommend a grazing fee schedule for 1986 and beyond. As a result, the Forest Service and the Bureau of Land Management analyzed data concerning the value of public and private rangelands during 1982 and 1983. Based on this study, an appraised value for grazing on public lands was derived for each of six price regions in sixteen Western states.[5] This value was based on average lease rates negotiated for grazing on private lands, with a downward adjustment of five percent to reflect differences in the terms and conditions generally attached to federal permits as compared with private leases.

The forage values resulting from this study replaced the values used in the DEIS for all Regions except Regions 8 and 9. The DEIS values were based on livestock enterprise budgets and linear programming (LP) models developed for each National Forest and National Grasslands by the Forest Service and the Economic Research Service. The LP models calculated the contribution to net income for a ranch enterprise of an additional AUM of grazing on Forest Service lands. Because the recent grazing study did not include eastern States, values for Regions 8 and 9 were developed using several different methods, including alternative feed prices, beef cattle prices, and livestock enterprise budgets. The resulting estimates were averaged to establish the RPA value. No forage values were calculated for Alaska.

Table 4 compares the forage values used for the FEIS with the values in the DEIS. The FEIS values represent an average appraised market value per AUM for each Region. The DEIS values represent the maximum potential market price per AUM and are higher than the appraised values. The use of the lower appraised values was found to have no effect on the ranking of RPA alternatives.

Table 4.--Forage Values for the FEIS and DEIS, 1986

	Forest Service Regions								
	1	2	3	4	5	6	8	9	10
	(1982 dollars/AUM)								
FEIS Values	6.71	7.55	5.63	4.90	5.39	5.19	3.97	3.97	--
DEIS Values	11.15	10.50	8.74	11.00	10.40	10.50	6.10	6.00	--

To estimate changes in forage values over time, changes in the adjusted forage index specified in PRIA were determined. This adjusted forage index consists of a series of three indices measuring annual changes in private grazing land lease rates, the price of beef cattle, and the costs of livestock production. The annual rate of change in the adjusted forage index from 1966 to 1983 was determined by regression analysis to be 0.6 percent annually. Therefore, the forage values for RPA were increased 0.6 percent per year from 1986 to 2030, or an increase in value of 33 percent over the planning period.

Commercial Wildlife and Fish Values

Values for commercial fish were derived from National Marine Fisheries Service data. The average annual value for the commercial harvest of anadromous fish was calculated by weighting values for individual States and species, by production levels. The mean of the annual averages for three consecutive years was then adjusted to 1982 base year dollars. The values for Regions 1, 4, and 5 were coordinated to reflect the general similarity in species mix from these Regions compared with Region 6. Region 10 had detailed information available on the species mix coming from National Forest lands. Regression analysis was applied to eleven years of data to generate values by species for 1980, and the 1980 weighted average value for all species was then adjusted to 1982 dollars.

[5]U.S. Department of Interior, Bureau of Land Mangement, and U.S. Department of Agriculture, Forest Service. Fair Market Rental Value of Grazing on Public Lands. U.S. Department of Commerce, National Technical Information Service. PB84-242-205. 1984.

To determine the value of the commercial harvest in the forest for RPA analysis, hauling costs were deducted from the market value of the fish at dockside. Private hauling costs were estimated from studies by the University of Washington and from Alaska.

Values for commercial wildlife (furbearer pelts) were developed from data available from the Fur Resources Committee of the International Association of Fish and Wildlife Agencies. The values are weighted average pelt values for all species trapped in each Region over two trapping seasons. Costs of harvest were estimated and deducted from pelt values to arrive at the RPA value.

RPA values for commercial wildlife and fish for 1986 are shown in Table 9. These values were projected to increase at an average rate of 0.8 percent annually, or 40 percent over the planning period. This rate of change is the average of the indices developed for the 1980 RPA alternatives to anticipate price increases for resources associated with dispersed recreation activities, including wildlife and fish.

Timber Values

Softwood sawtimber and hardwood sawtimber values were developed from the Timber Assessment Market Model (TAMM)[6] and the Hardwood Assessment Market Model (HAMM), respectively. Staff at the Pacific Northwest Forest and Range Experiment Station developed these models and maintain them. The models project real sawtimber stumpage prices based on derived stumpage demands, stumpage supplies from all ownerships in specified supply regions, and historical prices. Because the timber values generated by the models are affected by changes in supply at the regional level, timber is the only resource for which unit values change with the level of output.

The RPA alternatives projected the volume of softwood and hardwood sawtimber to be sold in each Region. These volumes had to be converted to harvest volumes by supply region for TAMM and HAMM analyses. Price changes generated by the models on a supply region basis then had to be converted to Regional values. values projected by TAMM and HAMM were used to calculate indices of real price changes. These indices were then applied to base values estimated from historical data for each of the Regions. The rate of change varied by alternative, but generally represented an increase of one percent annually.

The softwood sawtimber stumpage values projected by TAMM represent the value of the timber at the time of harvest. Timber outputs estimated by Regions for alternatives were in terms of volumes sold. Therefore, TAMM prices were lagged to account for the time difference between sale and harvest. Also, TAMM values exclude that portion of the timber value which is credited to the timber purchaser in exchange for building any necessary roads. Regional estimates of purchaser road credits per unit of softwood sawtimber for each alternative were added to the projected values derived from TAMM to reflect the total value of the timber.

The HAMM model was used to project hardwood sawtimber values for Regions 8 and 9 only. These are the only two Regions which produce significant amounts of hardwoods.

Regional values for commercial softwood and hardwood products other than sawtimber were estimated from historical data in the Forest Service timber cut-and-sold reports.

Fuelwood values were determined from Forest and Regional timber management appraisal and sale data. Although there may be some recreation value associated with fuelwood gathering, no recreation value was included in the RPA analysis.

All of these values can be found in tables 9 and 10 of this appendix.

Recreation, Wilderness, and Wildlife and Fish Values

The development of unit values for recreation, wilderness, and wildlife and fish use for the 1985 RPA consisted of two steps:

The estimation of recreation, wilderness, and wildlife and fish values by activity; and

The adjustment of these values to reflect two levels of management.

The Resources Evaluation Group at the Rocky Mountain Forest and Range Experiment Station conducted an extensive literature search to develop the activity values for recreation.[7] Values for recreation,

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[6]Adams, Darius M. and Richard W. Haynes. "The 1980 Softwood Timber Assessment Market Model: Structure Projections, and Policy Simulations." Forest Science Monograph 22. 1980.

[7]Loomis, John and Cindy Sorg. "A Critical Summary of Empirical Estimates of the Values of Wildlife, Wilderness, and General Recreation Related to National Forest Regions." Rocky Mountain Forest and Range Experiment Station, U.S. Department of Agriculture, Forest Service. 1982.

wilderness, and wildlife and fish activities were developed primarily from recent travel cost models and contingent valuation research. These empirical studies estimated the net value of a recreation activity at a specific site, with consideration for the availability of existing or substitute sites. The values reported represent the net willingness to pay (or average consumer surplus) for the activity.

Forest Service and academic specialists reviewed the activity values from the empirical studies and adjusted them to achieve methodological consistency. The adjustments included:

- Putting all values on an activity day basis, using the amount of time in the day devoted to the primary activity;

- Adjusting dollar values to the January 1982 base year, using the GNP price deflator;

- Accounting for the opportunity cost of travel time;

- Adjusting values derived from travel cost studies using individual observation (number of visits to a site by a particular individual) rather than zonal aggregates (per capita visits to a site from particular zones of origin), because the individual observation method does not reflect the lower probability of participation in some activities as travel costs increase;

- Adjusting values from studies restricted to in-state residents; and

- Adjusting for omission of a protest mechanism in contingent valuation studies to check whether the assignment of zero value to an activity by a respondent is actually a protest against the means of payment (for example, taxes or license fees) rather than an assessment of the value of the activity.

For purposes of RPA analysis, values for recreation, wilderness, and wildlife and fish activity days were converted to a common length of time. This unit is a 12-hour recreation visitor day (RVD) for recreation and wilderness activities and a 12-hour wildlife and fish user day (WFUD) for these activities.

In the DEIS, the willingness to pay values for RVDs and WFUDs derived from the empirical studies were adjusted downward to estimate market prices that would be comparable to the value estimates of other resources. These market price estimates were held constant over time. Many of the comments received on the DEIS questioned the procedure that was used to make this adjustment and the fact that nontimber values were not indexed to anticipate real price increases in the future. As a result of these comments, indices were applied to the recreation, wilderness, and wildlife and fish values. In addition, the assumptions and adjustments that were made to develop consistent activity values across a variety of study methods and to convert willingness to pay values to market values were re-examined. Based on this review, the following revisions to the DEIS values were made:

(1) Most of the empirical studies were done in the late 1960s and 1970s. A few were done in the early 1980s. To make the studies consistent with each other and with other RPA data, the values were adjusted by the study panel to the base year, January 1982, using the GNP implicit price deflator. However, market price for recreation has not increased as fast as general inflation. Using the real price changes for recreation rather than for GNP to adjust the study values to the January 1982 base year reduced the values by approximately 15 percent.

(2) Most of the studies developed a value for recreation and wildlife/fish visitor days using the travel cost method. Some of the studies included an opportunity cost for the travel time required to get from the user's residence to the recreation site, while other studies did not. The study panel applied an upward adjustment of 30 percent to values from studies that had not included opportunity costs of travel time, to make the studies consistent with each other and with the accepted methodology of the travel cost procedures.

However, the studies that had already accounted for the opportunity cost of travel had adjusted the values upward from 40 percent to 150 percent. These percentages were considered too high to be applicable to most recreation or wildlife/fish visitor days on National Forests, given the following assumptions: (a) a large portion of recreation and wildlife/fish users are not employed, such as children, spouses, and retired people, and have no opportunity cost for travel; (b) the travel is part of the activity and some users are willing to pay for the travel itself; and (c) recreation on the forest is often not the main reason for the trip and, therefore, only a portion of the travel time should be charged to it.

All of the studies were site-specific. Some studies only included in-state residents, while others included all users regardless of their residence. To improve comparability, the study panel had initially made an upward adjustment of 15 percent to the values from studies that had included only in-state users. However, many recreation and wildlife opportunities exist in nearly every state. So the upward adjustment for studies that did not include out-of-state

people exaggerates the values because most recreation and wildlife users on National Forests are drawn from local areas. A downward adjustment of 20 percent was made to the values to correct for these concerns about the impacts of opportunity costs for travel time and out-of-state users.

(3) In the DEIS, the willingness to pay values for the RVDs and WFUDs were reduced by approximately 37 percent to be comparable to market prices. This reduction was based on a study of outdoor recreation facilities by Lewis,[8] which estimated that nationally a five-percent increase in price will result in a one-percent decrease in quantity demanded.

It was assumed, therefore, that a one-percent increase in the supply of recreation opportunities would result in a five-percent decrease in price to clear the market. In the DEIS, a five percent decrease in the willingness to pay values was calculated for each one percent of the 7.5 percent share of the RVD and WFUD market supplied by the Forest Service, resulting in a total reduction of 37.5 percent. Many comments on the DEIS suggested this calculation was inappropriate, since most of the Forest Service RVDs and WFUDs were already in existence and had been taken into account when the willingness-to-pay values were originally determined. For the FEIS, a correction was made to apply the demand elasticity factor only to those RVDs and WFUDs added between the time of the valuation studies and the RPA initial year of 1986. From 1972 to 1986, RVDs and WFUDs on National Forests are expected to increase from 184 million to 248 million. This sixty-four million increase is two percent of the total outdoor recreation visitor days provided by all sources. A five-percent decrease in price for each one percent of this two-percent supply change resulted in a ten-percent decrease in the values, instead of the 37.5 percent decrease in the DEIS.

The revisions discussed above resulted in the recreation, wilderness, and wildlife and fish activity values listed in Table 5 by Region for the initial year (1986).

Table 5.--Values for Recreation, Wilderness, and Wildlife and Fish Activities by NFS Region, 1986

	Forest Service Regions								
	1	2	3	4	5	6	8	9	10
	(1982 dollars/RVD or WFUD)								
Fishing:									
Anadromous	21	NA	NA	21	29	30	NA	35	30
Cold Water	9	10	12	9	10	13	7	13	13
Warm Water	8	9	11	9	10	NA	13	12	8
Salt Water	NA	NA	NA	NA	29	28	28	30	30
Hunting:									
Big Game	29	38	28	29	28	28	23	36	28
Small Game	12	14	12	13	12	12	15	14	12
Waterfowl	21	15	14	18	17	22	14	17	21
Upland Game	21	21	21	20	20	22	22	21	21
Boating:									
Motorized	5	7	9	6	6	4	6	11	6
Non-motorized	10	9	10	13	8	6	4	8	10
Other:									
Motorized Travel	6	7	6	6	7	7	6	8	7
Camping	4	6	8	4	7	5	9	9	5
Picnicking	4	8	8	4	4	6	6	7	6
Hiking	7	8	9	8	9	9	11	15	9
Wilderness	11	11	12	11	12	15	14	15	15
Downhill Skiing	26	30	28	30	31	28	25	31	28
Water Sports	6	7	8	7	8	7	8	10	7

[8]Lewis, Robert C. "Policy Formation and Planning for Outdoor Recreation Facilities." In Jay M. Hufres and R. Duane Lloyd. Outdoor Recreation--Advances in Application of Economics. U.S. Department of Agriculture, Forest Service, General Technical Report WO-2, Proceedings of National Symposium, pp. 62-69. 1977.

Some of the activities listed in Table 5 were aggregated into broader categories for the RPA analysis. Although values per RVD or WFUD were used in the RPA analysis, most of the activities evaluated consume much less time per visit or outing than the 12-hour period measured by the recreation visitor or wildlife/fish user day concept. Outing values are presented to express the value of recreation and wildlife activities in more familiar terms. The outing values, listed in Table 6, represent an estimate of the value of each boating, camping, fishing, or other experience over the number of hours each such experience customarily occurs.

Table 6.--Outing Values for Recreation, Wilderness, and Wildlife and Fish by NFS Region, 1986

	Forest Service Regions								
	1	2	3	4	5	6	8	9	10
	(1982 dollars/outing)								
Recreation & Wilderness									
Motorized Boating	0.66	2.34	1.90	2.25	1.97	0.76	1.40	2.19	1.58
Nonmotorized Boating	3.22	1.46	2.37	2.96	1.17	1.27	1.61	2.70	1.80
Motorized Travel	1.54	1.46	1.43	1.10	1.23	1.87	1.28	1.25	.88
Camping	4.39	4.39	7.30	3.91	5.56	4.82	8.63	8.85	4.39
Picnicking	0.58	1.32	1.84	0.95	1.13	1.58	1.10	4.82	2.19
Hiking	2.34	2.63	2.63	2.37	3.14	2.85	0.71	4.34	2.49
Wilderness	10.53	8.77	11.36	9.39	9.72	14.47	13.80	14.47	13.16
Downhill skiing	10.96	14.91	12.24	13.42	14.33	11.10	4.24	10.49	7.02
Water Sports	0.66	0.88	1.18	1.17	1.91	1.23	1.91	2.09	.94
Wildlife & Fish (WL/F)									
Big Game Use	13.60	20.98	15.79	16.09	17.54	17.11	12.79	18.61	14.91
Nongame Use	5.48	5.48	4.39	5.48	3.84	5.30	4.57	4.39	4.39
Anadromous Fish Use	6.73	NA	NA	7.23	10.20	10.37	NA	10.00	9.65
Resident Fish Use	3.22	2.41	3.52	2.41	3.51	3.84	4.18	3.99	3.84
Other Game Use	6.14	5.42	5.13	5.97	5.26	5.28	6.05	6.45	4.58
WL/F Recreation Use	6.43	6.14	5.14	0.79	4.47	6.75	6.18	6.43	4.82

Two further steps were necessary to use the RVD and WFUD unit values in the RPA analysis. The first step was to account for the quality of recreational experiences. The second step was to link unit values with the appropriate output levels from each Region.

To account for the quality of experience, the concept of standard and less-than-standard service was introduced for recreation activities. Outdoor recreation facilities can be operated at many levels. A facility is considered a standard service facility if it offers relatively high levels of cleanliness, water, visitor protection, information services, general maintenance, and site protection to maintain environmental quality. A less-than-standard facility offers minimal levels of these services. A special study was conducted by polling National Forest recreationists who had visited recreation sites of varying service levels. Recreationists were asked to value their experiences at both standard and nonstandard facilities. The study showed that on average the less-than-standard RVDs were valued at about 53 percent of the value of standard RVDs.

For the RPA analysis, the values derived from the travel cost and contingent valuation studies were used as estimates of RVD values at the standard level of service. Values for RVDs at less-than-standard level were 47 percent lower. Wildlife and fish activities were all evaluated at one level of service. The issue of level of management was not considered as important for the dispersed activities related to wildlife and fish. The standard and less-than-standard values for each activity for the initial year (1986) are shown in Table 7 (see also Table 9).

Table 7. Recreation, Wilderness, and Wildlife and Fish Values for Standard and Less-Than-Standard Levels of Service by NFS Region, 1986

	Forest Service Regions								
	1	2	3	4	5	6	8	9	10
	(1982 dollars/RVD)								
Motorized Boating:									
Standard	5	7	9	6	6	4	6	11	6
Less than standard	3	4	5	3	3	2	3	6	3
Nonmotorized Boating:									
Standard	10	9	10	13	8	6	4	8	10
Less than standard	5	5	5	7	4	3	2	4	5
Motorized Travel:									
Standard	6	7	6	6	7	7	6	8	7
Less than standard	3	4	3	3	4	4	3	4	4
Camping:									
Standard	4	6	8	4	7	5	9	9	5
Less than standard	2	3	4	2	4	3	5	5	3
Picnicking:									
Standard	4	8	8	4	4	6	6	7	6
Less than standard	2	4	4	2	2	3	3	4	3
Hiking:									
Standard	7	8	9	8	9	9	11	15	9
Less than standard	4	4	5	4	5	5	6	8	4
Wilderness:									
Standard	11	11	12	11	12	15	14	15	15
Less than standard	5	5	6	5	6	8	7	8	8
Downhill Skiing:									
Standatd	26	30	28	30	31	28	25	31	28
Less than standard	14	16	15	16	17	15	13	17	15
Water Sports:									
Standard	6	7	8	7	8	7	8	10	7
Less than standard	3	4	4	4	4	4	4	5	4

To link unit values with levels of output from each Region, individual activity values were aggregated into Recreation Opportunity Spectrum (ROS) class values. Land areas in National Forests are categorized by ROS classes according to the type of recreational opportunities they provide. The ROS classes are primitive, semi-primitive--nonmotorized and motorized, roaded--natural, rural, and urban. The ROS class value was calculated as the weighted average value of all the activities that occur in that ROS class. Figures on the number of RVDs or WFUDs for each activity occurring in each ROS class were based on the Forest Service Recreation Information Management system. This conversion of activity values was accomplished under the assumption that the value of an activity is the same regardless of the ROS class of the land where the activity occurs. Different ROS classes have different values only because they support a different mix of activities. Values for RPA alternatives were calculated by multiplying the unit values for ROS classes times estimates from Regions of the outputs of RVDs or WFUDs in each class.

Table 9 displays the recreation, wilderness, wildlife and fish values used for the initial year (1986) of the 1985 RPA Program. Where appropriate, activity values were grouped into ROS classes and adjusted for areas within Regions that did not have developed winter sports sites.

Finally, to provide for changes in recreation, wilderness, and wildlife and fish values over time, the values were increased 0.8 percent per year from 1986, or 40 percent over the planning period. This rate of change is the average of the indices used in the 1980 RPA Program to evaluate alternative levels of output for dispersed recreation.

A sensitivity analysis was conducted to assess the effects of changes in these values on the evaluation of national alternatives. Table 8 shows the ranking by present net value of RPA alternatives with recreation, wilderness, and wildlife and fish values decreased by 25 to 50 percent and increased by 10, 25 and 50 percent.

Table 8.--Sensitivity Analysis for Wildlife/Fish and Recreation/Wilderness Values

Rank Order	Current Value	Current Value -50%	Current Value -25%	Current Value +10%	Current Value +25%	Current Value +50%
			(Alternatives Ranked by PNV)			
1	Alt. 7	Alt. 7	Alt. 7	Alt. 7	Alt. 3	Alt. 3
2	Alt. 3	Alt. 3	Alt. 3	Alt. 3	Alt. 7	Alt. 7
3	Alt. 4	Alt. 4	Alt. 4	Alt. 4	Alt. 9	Alt. 9
4	Alt. 9	Alt. 9	Alt. 9	Alt. 9	Alt. 4	Alt. 4
5	Alt. 6	Alt. 6	Alt. 6	Alt. 6	Alt. 6	Alt. 6
6	Alt. 8	Alt. 8	Alt. 8	Alt. 8	Alt. 8	Alt. 8
7	Alt. 2	Alt. 2	Alt. 2	Alt. 2	Alt. 2	Alt. 2
8	Alt. 1	Alt. 1	Alt. 1	Alt. 1	Alt. 1	Alt. 1
9	Alt. 5	Alt. 5	Alt. 5	Alt. 5	Alt. 5	Alt. 5

The reduction of 25 and 50 percent had no effect on the ranking of alternatives by present net value. Increasing values by 10 percent also had no effect. However, a 25 and 50 percent increase caused a re-ordering of the top alternatives. This was because the alternatives that moved up had slightly higher outputs of RVDs and WFUDs than the displaced alternatives.

Table 9.--NFS System Resource Values for the Initial Year (1986) of the 1985 RPA Program, by Resource Activity and Region (in 1982 Dollars)

	WATER				RANGE	
Region	Increased Water Yield ($/acre-foot)	Sediment Reduction ($/M tons)	Improved Water Quality ($/acre-foot)	Maintained Water Quality ($/acre-foot)	Grazing Leases ($/AUM)	Wild Horses and Burros ($/animal)
1	13.50	7.00	2.71	0.39	6.71	125
2	45.50	6.00	4.84	0.69	7.55	125
3	43.50	5.00	3.80	0.56	5.63	125
4	12.00	6.00	2.72	0.39	4.90	125
5	59.00	10.00	3.44	0.49	5.39	125
6	--	6.00	1.40	0.20	5.19	125
8	--	4.00	11.57	1.65	3.97	125
9	--	4.00	16.78	2.26	3.97	125
10	--	3.00	1.17	0.23	--	--

	ENERGY MINERALS					
Region	R&OR Energy Minerals Production ($/BBTU)	Oil & Gas Production ($/BBTU)	Coal Production ($/BBTU)	Uranium Production ($/BBTU)	Geothermal Production ($/BBTU)	Lease-Rentals Energy ($/acre)
1	595	595	144	4	253	2
2	120	296	144	4	253	2
3	--	283	144	4	253	2
4	--	565	144	4	253	2
5	--	642	144	4	253	2
6	258	258	144	4	253	2
8	460	492	144	4	253	2
9	329	522	144	4	253	2
10	--	--	144	4	253	2

	NONENERGY MINERALS				
Region	Mineral Materials ($/M tons)	Locatable Minerals ($/M dollars)	Leaseable Minerals Nonenergy ($/M dollars)	Lease-Rentals Nonenergy ($/acre)	R&OR Non-Energy Min'l Production ($/M dollars)
1	3100	50	50	1	50
2	3100	50	50	1	50
3	3100	50	50	1	50
4	3100	50	50	1	50
5	3100	50	50	1	50
6	3100	50	50	1	50
8	3100	50	50	1	50
9	3100	50	50	1	50
10	3100	50	50	1	50

	TIMBER, EXCEPT SOFTWOOD SAWTIMBER ($/MCF)				
Region	Softwood Roundwood	Softwood Fuelwood	Hardwood Roundwood	Hardwood Fuelwood	Hardwood Sawtimber
1	34.50	28.00	--	--	--
2	19.30	19.00	24.00	19.00	11.80
3	36.00	31.00	49.10	31.00	47.60
4	40.30	31.00	25.40	31.00	30.60
5	38.50	62.00	26.80	62.00	33.30
6	90.40	31.00	19.10	31.00	75.60
8	95.90	99.00	15.80	99.00	See Table 10
9	122.40	62.00	37.90	62.00	See Table 10
10	--	35.00	--	--	--

ABBREVIATIONS: AUM = animal unit month; BBTU = billion British thermal units; M = thousand; MCF = thousand cubic feet; NA = not applicable; R&OR = reserved and outstanding rights; RVD = recreation visitor day; WFUD = wildlife and fish user day; Standard = standard service level; Less Than Std = less than standard service level; Region 1 = Northern; Region 2 = Rocky Mountain; Region 3 = South Western; Region 4 = Inter-Mountain; Region 5 = Pacific Southwest; Region 6 = Pacific Northwest; Region 8 = Southern; Region 9 = Eastern; and Region 10 = Alaska.

Table 9 (Con't) NFS System Resource Values for the Initial Year (1986) of the 1985 RPA Program, by Resource Activity and Region (in 1982 Dollars)

RECREATION ($/RVD)

Region	PRIMITIVE USE Standard	PRIMITIVE USE Less Than Std	SEMIPRIMITIVE NONMOTORIZED USE Standard	SEMIPRIMITIVE NONMOTORIZED USE Less Than Std	SEMIPRIMITIVE MOTORIZED USE Standard	SEMIPRIMITIVE MOTORIZED USE Less Than Std
1	8.74	4.64	11.16	5.92	10.29	5.46
2	9.49	5.02	12.73	6.75	11.67	6.19
3	10.35	5.48	12.50	6.62	11.58	6.14
4	8.97	4.76	11.53	6.11	10.58	5.61
5	10.81	5.73	12.68	6.72	11.96	6.34
6	10.35	5.48	12.19	6.46	11.16	5.92
8	10.06	5.34	11.58	6.14	10.93	5.80
9	14.66	7.77	16.82	8.91	15.24	8.08
10	10.29	5.46	12.42	6.59	11.50	6.10

RECREATION (cont'd)

Region	ROADED NATURAL USE Standard	ROADED NATURAL USE Less Than Std	RURAL USE Standard*	RURAL USE Less Than Std*	URBAN USE Standard*	URBAN USE Less Than Std*
1	8.05	4.27	7.13 (6.35)	3.78 (3.36)	9.72 (6.08)	5.15 (3.22)
2	9.17	3.42	8.45 (7.52)	4.48 (3.98)	11.56 (7.29)	6.13 (3.85)
3	9.58	5.08	9.43 (8.71)	5.00 (4.62)	11.73 (8.50)	6.22 (4.51)
4	8.17	4.33	7.48 (6.46)	3.97 (3.42)	10.70 (6.07)	5.67 (3.22)
5	9.63	5.11	8.97 (7.99)	4.76 (4.23)	12.27 (7.80)	6.15 (4.14)
6	8.63	4.57	7.79 (6.96)	4.13 (3.68)	10.47 (6.69)	5.55 (3.54)
8	9.14	4.85	8.97 (8.39)	4.76 (4.45)	11.04 (8.44)	5.85 (4.47)
9	11.90	6.31	11.21 (10.41)	5.94 (5.51)	14.00 (10.28)	7.42 (5.45)
10	8.82	4.67	7.76 (7.00)	4.11 (3.72)	10.09 (6.64)	5.35 (3.52)

WILDERNESS ($/RVD)

Region	PRIMITIVE USE Standard	PRIMITIVE USE LT Standard	SEMIPRIMITIVE NONMOTORIZED USE Standard	SEMIPRIMITIVE NONMOTORIZED USE LT Standard	SEMIPRIMITIVE MOTORIZED USE Standard	SEMIPRIMITIVE MOTORIZED USE LT Standard	ROADED NATURAL USE Standard	ROADED NATURAL USE LT Standard
1	11.50	6.10	11.50	6.10	11.50	6.10	NA	NA
2	11.50	6.10	11.50	6.10	11.50	6.10	NA	NA
3	12.65	6.71	12.65	6.71	12.65	6.71	NA	NA
4	11.50	6.10	11.50	6.10	11.50	6.10	NA	NA
5	12.65	6.71	12.65	6.71	12.65	6.71	NA	NA
6	16.10	8.54	16.10	8.54	16.10	8.54	NA	NA
8	14.38	7.62	14.38	7.62	14.38	7.62	NA	NA
9	16.10	8.54	16.10	8.54	16.10	8.54	NA	NA
10	16.10	8.54	16.10	8.54	16.10	8.54	13.80	7.31

WILDLIFE & FISH

Region	Big Game Use ($/WUFD)	Non-Bame Use ($/WUFD)	Other Game Use ($/WUFD)	Resident Fish Use ($/WUFD)	Anadromous Fish Use ($/WUFD)	Wildlife and Fish Rec. Use ($/WUFD)	Anadromous Fish Commerc'l Harvest ($/M lbs)	Furbearer Commercial Harvest ($/M pelts)
1	28.52	23.00	19.32	10.12	21.16	18.40	1840	15300
2	37.72	23.00	17.48	10.12	NA	19.32	--	25800
3	27.60	23.00	16.56	11.96	NA	17.48	--	--
4	28.52	23.00	17.48	10.12	21.16	16.56	1840	--
5	27.60	23.00	16.56	11.04	28.52	16.56	1840	21840
6	27.60	23.00	17.48	13.80	30.36	19.32	1050	24880
8	23.00	23.00	16.56	11.96	NA	16.56	--	--
9	35.70	23.00	19.32	11.96	34.96	18.40	--	21710
10	27.60	23.00	17.48	10.12	30.36	18.40	870	29860

Note: Values in parentheses are to be used in those areas without winter sports sites.

Table 10.--NFS Softwood Sawtimber Values for the Years 1986, 1900, & 2030 by Region, & by Alternative, in $ per Thousand Cubic Feet (1982 $'s)

Region	Year	Recommended Program	Alternative 1	2	3	3-A	4	5	6	7	8	9
							--SOFTWOOD SAWTIMBER--					
1	1986	547	534	536	549	550	518	587	538	531	543	536
	1990	526	483	490	545	545	489	558	519	499	525	471
	2030	923	1032	661	868	868	713	1271	745	755	743	557
2	1986	179	206	238	190	190	245	173	193	191	189	237
	1990	176	200	177	180	180	176	156	176	173	169	170
	2030	244	306	195	246	246	219	314	237	242	220	160
3	1986	820	809	831	823	823	828	832	813	809	809	831
	1990	716	731	712	746	746	697	779	723	711	709	693
	2030	1271	1564	1077	1396	1396	1183	1862	1202	1240	1202	932
4	1986	359	413	368	349	349	368	348	358	352	351	342
	1990	317	392	322	338	338	316	331	327	294	316	292
	2030	543	714	438	575	575	467	774	496	508	505	368
5	1986	954	900	849	932	932	882	1049	901	791	868	819
	1990	851	787	754	813	813	790	957	780	758	755	694
	2030	1490	1574	1038	1466	1466	1098	1803	1258	1270	1233	934
6	1986	994	1006	949	1027	1027	970	1188	993	961	951	942
	1990	858	888	824	899	899	859	1080	859	829	824	776
	2030	1264	1837	1185	1706	1706	1270	2100	1464	1476	1430	1070
8	1986	1206	1187	1101	1192	1192	1004	1186	1169	1154	1164	1078
	1990	1242	1246	1118	1272	1272	1135	1307	1224	1199	1207	1087
	2030	1770	2303	1603	2077	2077	1712	2431	1854	1898	1858	1566
9	1986	615	665	584	778	778	585	690	624	554	561	477
	1990	658	705	633	830	830	634	733	627	617	636	517
	2030	1039	1151	995	1126	1126	1007	1183	1045	1079	1051	910
10	1986	815	815	815	815	815	815	815	815	815	815	815
	1990	815	815	815	815	815	815	815	815	815	815	815
	2030	745	745	745	745	745	745	745	745	745	745	269
							--HARDWOOD SAWTIMBER--					
8	1986	227	247	247	247	247	245	252	247	247	247	245
	1990	215	245	243	245	245	243	247	240	243	240	240
	2030	307	364	341	353	353	346	371	339	353	341	337
9	1986	374	378	378	374	374	378	389	366	378	374	370
	1990	359	370	359	363	363	359	382	343	363	355	351
	2030	672	466	389	431	431	401	485	385	435	420	378

[1]These values are for the High Bound. Low Bound values were not developed at the Regional level. Instead, the price-volume relationships from other alternatives were used to develop the composite national value applied to Low Bound softwood sawtimber outputs.

Appendix G:

Benchmarks

As part of the process for developing National Forest plans, the analysis of the management situation examined resource output potential under various objectives, constraints, and assumptions. The land's capability to supply various outputs was determined for the maximum production level for certain single resource outputs. The maximum benchmark for a single resource output reflected the biologic potential of that resource limited only by specific laws and regulations, such as those that protect threatened and endangered species, water quality, and soil productivity.

Maximum Timber Benchmark

National Forests developed their timber benchmarks to maximize the production of timber subject to specific laws and regulations without impairing the productivity of the land. This benchmark displays the biologic potential of the individual forests to produce timber. The resulting schedule of timber harvest is the maximum that could be produced in the first five decades, subject to a maximum 25 percent departure per decade.

All lands classified as capable, available, and tentatively suitable for timber production were considered in this analysis. Policy constraints, such as non-declining flow, specific rotation lengths and old-growth retention guidelines, were not imposed in this analysis, nor were budget or output constraints. Inventory constraints were imposed to ensure that long-term sustained yield capacity was not exceeded and soil and water productivity were not impaired.

The maximum timber benchmark's sole objective is to display the biologic potential of National Forest lands. This national benchmark was developed by adding the Regional timber benchmark totals. Table G.1 compares Alternative 2 (High Market), Alternative 9 (High Productivity) and the Recommended Program with the maximum timber benchmark.

Table G.1--Timber Benchmark Comparison, Billion Board Feet

	Maximum Timber Benchmark	Recommended Program Low Bound	- %	High Bound	- %	Alternative 2	- %	Alternative 9	- %
1986	17.47	11.4	65	11.4	65	13.0	74	13.0	74
1990	18.64	9.0	48	11.6	62	14.5	78	15.3	82
2000	20.36	11.8	58	14.0	69	17.3	85	20.2	99
2030	22.49	15.6	69	20.0	89	20.0	89	22.1	98

Maximum Range Benchmark

National Forests developed the range benchmarks to maximize the production of livestock forage subject to specific laws and regulations and without impairing the productivity of the land. This benchmark displays the biologic potential of the individual forests to produce livestock forage. All land areas classified as capable, suitable, and available for livestock production were included in the analysis. The resulting schedule of forage levels over time is the maximum that could be produced over the first five decades.

This benchmark's sole objective is to display the biologic potential of National Forest rangelands. The national benchmark is the sum of the Regional range benchmarks. Table G.2 compares Alternative 2 (High Market), Alternative 9 (High Productivity) and the Recommended Program with the maximum range benchmark.

Table G.2--Range Benchmark Comparison, Million AUM

	Maximum Range Benchmark	Recommended Program Low Bound	- %	High Bound	- %	Alternative 2	- %	Alternative 9	- %
1986	10.66	9.8	92	9.8	92	10.2	96	10.2	96
1990	11.89	9.8	82	9.8	82	10.7	90	10.7	90
2000	11.97	10.0	84	10.3	86	11.8	98	11.1	93
2030	14.26	10.3	72	11.3	79	13.3	93	12.2	86

Appendix H:

Regional Projected Outputs, Activities and Costs

TABLE H.1 -- REGION 1 - NATIONAL FOREST SYSTEM PROGRAM: SUMMARY BY ALTERNATIVE, 1986, 1990, and 2030

INDICATOR	UNIT OF MEASURE 1/	RECOMMENDED PROGRAM						ALTERNATIVE 1			ALTERNATIVE 2			ALTERNATIVE 3		
		Low Bound			High Bound			Constant			Market			Nonmarket		
		1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
WATER-MINERALS																
INCREASED WATER YIELD	THOUS AF	10.0	8.6	16.0	10.0	10.0	18.4	11.0	11.0	11.0	14.0	18.0	28.0	10.0	11.0	18.0
ENERGY MINERALS PRODUCED	QUADS	.2	.2	0	.2	.2	0	.1	.2	0	.2	.3	0	.2	.2	0
NONENERGY MINERALS PROD	MILLION $	159.3	149.8	234.9	159.3	161.2	265.4	120.6	120.6	170.8	189.3	189.3	313.0	120.6	120.6	170.8
RANGE																
PERMITTED GRAZING	MIL AUM	1.4	1.4	1.5	1.4	1.4	1.5	1.4	1.4	1.4	1.4	1.4	2.0	1.4	1.4	1.3
IMPROVED RANGE ALLOTMENTS	PERCENT	75.0	60.0	78.0	75.0	78.0	100.0	75.0	78.0	100.0	75.0	78.0	100.0	75.0	78.0	100.0
RECREATION-WILDERNESS																
RECREATION USE	MIL RVD	13.2	12.8	17.3	13.2	14.0	20.6	10.4	10.4	10.4	8.3	13.1	20.2	14.5	14.6	22.0
WILDERNESS USE	MIL RVD	1.6	1.6	2.2	1.6	2.0	2.8	1.4	1.4	1.4	.9	1.4	2.1	1.7	1.7	2.5
WILDERNESS MGMT	MIL ACRES	5.0	5.5	5.5	5.0	5.8	6.2	6.0	6.0	6.0	5.0	5.0	5.0	6.0	6.5	6.5
TRAIL CONST/RECONST	MILES	64.1	78.0	174.3	64.1	250.0	183.8	20.0	20.0	20.0	28.0	118.0	190.0	62.0	189.0	212.0
TIMBER																
TIMBER OFFERED	BIL BF	1.1	.8	1.6	1.1	1.1	2.5	1.1	1.1	1.1	1.4	1.9	3.0	1.0	1.0	1.6
TIMBER OFFERED	BIL CF	.2	.2	.4	.2	.3	.5	.2	.2	.3	.3	.4	.7	.2	.2	.4
FUELWOOD	MIL CF	71.1	73.1	82.5	71.1	77.6	87.5	78.4	78.4	78.4	91.5	89.5	51.0	77.9	86.5	105.4
REFORESTATION	THOUS ACRES	43.0	41.0	40.5	43.0	47.7	42.6	55.0	55.0	55.0	40.4	62.9	66.3	48.7	43.5	36.1
TIMBER STAND IMP	THOUS ACRES	14.0	10.0	43.8	14.0	15.0	46.2	16.1	16.1	16.1	22.6	43.6	97.9	16.2	22.6	38.9
WILDLIFE/FISH																
WILDLIFE AND FISH USE	MIL WFUD	1.7	1.4	2.2	1.7	2.0	3.3	1.8	1.8	1.9	.9	1.9	3.3	1.8	1.9	3.4
ANADROMOUS FISH COMMERCIAL HARVEST	MIL POUNDS	.1	.1	.2	.1	.1	.1	.1	.1	.2	.1	.1	.1	.1	.1	.1
PROTECTION/SUPPORT																
FIRE MANAGEMENT EFFECTIVENESS INDEX	$/THOU PROT ACRES	759	833	697	759	747	697	727	727	727	750	706	698	718	698	699
TIMBER PURCHASER ROAD CONST/RECONST	MILES	763	776	855	763	1306	944	830	830	830	918	1601	1549	851	1150	954
ARTERIAL/COLLECTOR ROAD CONST/RECONST	MILES	337	220	295	337	631	350	709	827	643	930	1061	780	650	736	576
HUMAN RESOURCES PROG	THOUS PERSON YRS	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.5	.5	.6	.5	.5
COSTS																
OPERATIONAL	MILLION $	72.7	68.6	132.4	72.7	99.8	136.8	96.8	96.8	96.3	95.3	128.8	167.7	100.4	119.5	136.2
CAPITAL INVESTMENT	MILLION $	78.7	74.3	123.2	78.7	112.2	130.4	103.0	109.1	101.1	113.8	175.1	207.8	107.9	137.1	133.3
TOTAL-NFS	MILLION $	151.4	143.0	255.6	151.4	212.1	267.1	199.8	205.9	197.4	209.1	303.9	375.4	208.3	256.6	269.7
ALLOCATED	MILLION $	9.1	10.6	26.0	9.1	13.0	20.3	14.5	14.5	14.5	13.6	23.1	36.7	13.4	16.9	20.2
APPROPRIATED	MILLION $	142.3	132.4	229.5	142.3	199.1	246.8	185.3	191.4	182.8	195.5	280.8	338.8	194.9	239.7	249.5

1/ ABBREVIATIONS: BIL = Billion, MIL = Million, THOUS =Thousand, IMP = Improvement, PROT = Protected, YRS = Years, BF = Board Feet, CF = Cubic Feet, AUM = Animal Unit Months, PROD = Production, PROG = Program, RVD = Recreation Visitor Days, WFUD = Wildlife and Fish User Days, MGMT = Management, AF = Acre Feet, QUADS = One Quadrillion BTU (British Thermal Units), CONST = Construction, RECONST = Reconstruction

* Indicates no data available

ALTERNATIVE 3A High Wilderness			ALTERNATIVE 4 All Resources			ALTERNATIVE 5 Reduced			ALTERNATIVE 6 Implemented Plans			ALTERNATIVE 7 High PNV			ALTERNATIVE 8 1980 RPA			ALTERNATIVE 9 High Productivity		
1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
10.0	11.0	18.0	16.0	18.0	26.0	2.0	2.0	2.0	11.0	11.0	20.0	16.0	16.0	22.0	13.0	13.0	20.0	14.0	18.0	31.0
.2	.2	0	.2	.3	0	.1	.2	0	.2	.3	0	.2	.3	0	.2	.3	0	.2	.3	0
120.6	120.6	170.8	189.4	189.4	313.0	86.1	86.1	142.3	172.2	172.2	284.5	189.4	189.4	313.0	189.4	189.4	313.0	189.3	189.3	313.0
1.4	1.4	1.3	1.4	1.4	1.6	.5	.5	.5	1.4	1.4	1.5	1.4	1.4	1.5	1.4	1.4	1.6	1.4	1.4	2.0
75.0	78.0	100.0	75.0	78.0	100.0	99.0	99.0	99.0	75.0	78.0	100.0	75.0	78.0	100.0	75.0	78.0	100.0	75.0	78.0	100.0
14.5	14.6	21.6	13.4	13.4	19.5	6.8	6.6	6.0	13.6	13.7	21.1	13.0	13.0	20.0	13.4	13.4	19.3	12.7	13.4	20.3
1.7	1.7	2.9	1.3	1.3	1.9	.7	.7	.6	2.0	2.0	2.8	1.6	1.6	2.4	1.5	1.5	2.2	›	1.4	2.1
6.0	6.5	7.6	5.2	5.6	5.6	5.0	5.0	5.0	6.0	6.5	6.5	6.0	5.6	5.6	6.0	6.5	6.5	5.0	5.0	5.0
62.0	189.0	212.0	49.0	140.0	173.0	12.0	12.0	12.0	51.0	151.0	184.0	46.0	124.0	199.0	51.0	147.0	181.0	49.0	151.0	189.0
1.0	1.0	1.6	1.4	1.7	2.8	.7	.7	.8	1.1	1.2	2.1	1.2	1.4	2.3	1.2	1.2	2.2	1.4	1.9	3.3
.2	.2	.4	.3	.4	.6	.2	.2	.2	.2	.3	.5	.3	.3	.5	.3	.3	.5	.3	.4	.7
77.9	86.5	105.4	88.3	86.5	51.9	51.2	51.2	51.2	79.6	84.8	111.5	85.8	85.8	106.3	88.3	88.3	110.9	91.5	89.5	51.0
48.7	43.5	36.1	66.1	66.5	52.9	19.4	19.4	19.4	48.9	50.6	47.4	52.6	54.7	50.2	53.9	48.5	40.9	40.4	62.9	73.8
16.2	22.6	38.9	24.4	46.0	87.1	16.4	16.4	16.4	15.3	26.1	50.2	19.3	37.9	74.1	19.9	33.6	67.2	22.6	43.6	109.0
1.8	1.9	3.4	1.8	1.9	3.2	1.0	1.0	1.0	1.8	1.9	3.3	1.8	1.9	3.2	1.8	1.9	3.2	.9	1.9	3.3
.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
718	698	699	721	701	699	754	754	754	719	700	697	721	706	698	721	701	699	750	706	698
851	1150	954	918	1724	1550	915	915	915	1281	1483	1090	965	1440	1199	1067	1545	1278	918	1531	1228
650	736	576	680	821	707	526	526	526	663	689	287	664	918	698	680	821	707	935	1059	779
.6	.5	.5	.6	.5	.5	1.2	1.2	1.2	.6	.5	.5	.6	.5	.5	.6	.5	.5	.6	.5	.5
100.4	119.5	136.4	108.4	131.2	155.0	84.3	83.6	81.9	102.4	124.4	148.1	103.3	121.0	148.1	104.7	122.7	145.4	97.0	131.0	177.3
107.9	137.1	133.3	122.9	176.4	184.4	74.8	74.9	74.8	122.2	146.3	132.1	115.1	154.8	159.8	120.2	156.6	160.1	115.7	175.9	211.2
208.3	256.6	269.7	231.3	307.7	339.4	159.1	158.5	156.7	224.6	270.7	280.2	218.4	275.8	307.9	224.9	279.3	305.5	212.7	306.9	388.5
13.4	16.9	20.2	16.1	23.3	28.6	14.8	14.8	14.8	13.3	17.8	24.3	14.1	19.9	27.4	14.2	18.4	23.3	13.7	23.1	40.3
194.9	239.7	249.5	215.2	284.4	310.8	144.2	143.6	141.9	211.3	252.8	255.8	204.2	256.0	280.5	210.8	260.8	282.1	199.0	283.8	348.2

TABLE H.2 -- REGION 2 - NATIONAL FOREST SYSTEM PROGRAM: SUMMARY BY ALTERNATIVE, 1986, 1990, and 2030

INDICATOR	UNIT OF MEASURE 1/	RECOMMENDED PROGRAM						ALTERNATIVE 1			ALTERNATIVE 2			ALTERNATIVE 3		
		Low Bound			High Bound			Constant			Market			Nonmarket		
		1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
WATER-MINERALS																
INCREASED WATER YIELD	THOUS AF	18.0	27.3	464.7	18.0	74.1	535.2	21.3	56.6	355.9	28.3	95.8	640.5	29.3	83.0	415.1
ENERGY MINERALS PRODUCED	QUADS	7.5	7.5	7.1	7.5	7.5	7.5	7.5	7.4	7.5	7.5	7.7	7.9	7.5	7.4	5.3
NONENERGY MINERALS PROD	MILLION $	498.6	480.9	712.6	498.6	534.6	788.5	442.4	480.4	628.4	482.4	514.4	828.4	462.4	486.4	668.4
RANGE																
PERMITTED GRAZING	MIL AUM	2.2	2.2	2.3	2.2	2.1	2.5	2.1	2.1	2.1	2.2	2.3	3.0	2.2	2.1	2.1
IMPROVED RANGE ALLOTMENTS	PERCENT	68.0	63.0	79.0	68.0	79.0	92.0	64.0	67.0	88.0	67.0	80.0	91.0	67.0	75.0	85.0
RECREATION-WILDERNESS																
RECREATION USE	MIL RVD	24.5	25.4	41.2	24.5	27.5	48.2	24.3	24.6	25.8	24.2	27.0	40.5	28.4	32.0	52.1
WILDERNESS USE	MIL RVD	1.7	2.1	3.5	1.7	2.6	4.5	1.8	1.8	1.9	1.5	2.0	2.9	2.1	2.7	3.9
WILDERNESS MGMT	MIL ACRES	4.3	4.6	4.6	4.3	4.9	5.3	4.3	4.3	4.3	4.3	4.3	4.3	4.9	4.9	4.9
TRAIL CONST/RECONST	MILES	56.5	69.0	344.4	56.5	724.5	365.5	30.0	45.5	50.5	29.7	83.5	112.9	269.9	375.7	278.8
TIMBER																
TIMBER OFFERED	BIL BF	.4	.3	.6	.4	.5	.9	.4	.4	.4	.5	.6	1.0	.4	.4	.5
TIMBER OFFERED	BIL CF	.1	.1	.1	.1	.1	.2	.1	.1	.1	.1	.1	.2	.1	.1	.1
FUELWOOD	MIL CF	22.9	23.5	25.0	22.9	24.9	26.5	12.8	13.0	13.1	18.2	23.4	27.9	20.2	24.4	26.3
REFORESTATION	THOUS ACRES	8.0	4.0	9.7	8.0	7.7	10.2	4.1	4.0	3.3	7.2	10.3	13.0	4.7	6.0	2.7
TIMBER STAND IMP	THOUS ACRES	23.0	25.0	42.6	23.0	40.8	44.9	29.4	25.7	20.8	34.0	31.0	49.3	31.1	26.9	31.1
WILDLIFE/FISH																
WILDLIFE AND FISH USE	MIL WFUD	1.7	2.6	4.2	1.7	3.2	5.3	2.8	2.8	2.8	3.0	3.4	4.0	3.2	3.7	5.8
ANADROMOUS FISH COMMERCIAL HARVEST	MIL POUNDS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PROTECTION/SUPPORT																
FIRE MANAGEMENT EFFECTIVENESS INDEX	$/THOU PROT ACRES	268	299	267	268	276	267	266	266	266	267	283	271	266	268	268
TIMBER PURCHASER ROAD CONST/RECONST	MILES	517	441	745	517	684	847	499	430	438	671	729	1072	443	402	501
ARTERIAL/COLLECTOR ROAD CONST/RECONST	MILES	64	52	107	64	95	108	160	121	106	198	159	155	184	157	162
HUMAN RESOURCES PROG	THOUS PERSON YRS	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7
COSTS																
OPERATIONAL	MILLION $	47.8	46.1	79.2	47.8	72.8	81.8	60.1	60.5	61.8	64.7	72.0	85.1	65.8	71.3	79.5
CAPITAL INVESTMENT	MILLION $	34.4	31.8	69.2	34.4	49.7	70.2	37.1	35.2	33.6	49.3	55.3	71.5	45.7	49.8	53.9
TOTAL-NFS	MILLION $	82.2	77.9	148.4	82.2	122.5	152.0	97.3	95.6	95.4	113.9	127.3	156.7	111.5	121.0	133.4
ALLOCATED	MILLION $	2.4	2.7	13.8	2.4	9.6	10.8	7.9	7.6	7.5	8.5	9.2	13.4	8.1	8.6	9.2
APPROPRIATED	MILLION $	79.8	75.2	134.6	79.8	112.9	141.2	89.3	88.0	87.9	105.4	118.1	143.2	103.4	112.4	124.2

1/ ABBREVIATIONS: BIL = Billion, MIL = Million, THOUS =Thousand, IMP = Improvement, PROT = Protected, YRS = Years, BF = Board Feet, CF = Cubic Feet, AUM = Animal Unit Months, PROD = Production, PROG = Program, RVD = Recreation Visitor Days, WFUD = Wildlife and Fish User Days, MGMT = Management, AF = Acre Feet, QUADS = One Quadrillion BTU (British Thermal Units), CONST = Construction, RECONST = Reconstruction

* Indicates no data available

ALTERNATIVE 3A			ALTERNATIVE 4			ALTERNATIVE 5			ALTERNATIVE 6			ALTERNATIVE 7			ALTERNATIVE 8			ALTERNATIVE 9		
High Wilderness			All Resources			Reduced			Implemented Plans			High PNV			1980 RPA			High Productivity		
1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
29.3	83.0	415.1	27.5	95.2	534.5	16.8	44.0	139.3	28.0	86.7	464.7	26.9	77.9	425.0	27.3	81.6	424.9	28.3	96.7	767.2
7.5	7.4	5.3	7.5	7.5	7.5	7.3	6.6	3.3	7.5	7.5	7.7	7.5	7.4	6.6	7.5	7.5	7.7	7.5	7.7	8.1
462.4	486.4	668.4	482.4	514.4	748.4	482.4	450.1	642.7	482.4	514.4	768.4	482.4	514.4	788.4	482.4	514.4	748.4	482.4	514.4	828.4
2.2	2.1	2.1	2.2	2.2	2.4	2.1	2.0	1.8	2.2	2.2	2.4	2.2	2.2	2.3	2.2	2.2	2.4	2.2	2.3	2.5
67.0	75.0	85.0	68.0	79.0	89.0	65.0	67.0	69.0	69.0	80.0	90.0	68.0	79.0	92.0	*	*	*	67.0	80.0	91.0
28.4	32.0	58.9	27.2	30.3	46.1	22.8	22.6	22.1	27.0	30.8	50.6	27.2	30.5	49.6	27.2	30.5	48.0	24.2	27.5	47.5
2.1	2.7	3.9	2.1	2.6	3.7	1.7	1.6	1.5	1.9	2.4	3.8	2.0	2.4	3.7	2.1	2.6	3.7	1.7	1.9	3.0
4.9	4.9	4.9	4.9	4.9	4.9	4.3	4.3	4.3	4.3	4.3	4.9	4.3	4.3	4.9	4.9	4.9	4.9	4.3	4.3	4.3
269.9	375.7	278.8	114.2	292.0	307.3	28.2	27.2	27.6	112.5	214.1	258.7	53.2	125.9	175.3	116.9	298.4	307.3	239.9	176.8	207.2
.4	.4	.5	.5	.6	.8	.3	.2	.2	.4	.5	.6	.4	.4	.5	.4	.5	.5	.5	.6	1.2
.1	.1	.1	.1	.1	.2	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.3
20.2	24.4	26.3	17.1	23.4	25.9	12.2	12.2	11.2	21.1	24.8	26.1	19.3	23.1	24.4	18.6	22.0	23.7	18.2	23.5	28.0
4.7	6.0	2.7	6.9	9.9	11.1	4.1	3.4	2.3	6.8	7.8	8.8	6.8	7.4	5.7	6.8	7.7	8.1	7.3	10.3	15.6
31.1	26.9	31.1	32.0	30.1	40.5	24.8	15.0	15.1	34.8	45.8	38.6	25.0	24.8	25.2	35.2	38.4	41.5	34.0	31.1	59.3
3.2	3.7	5.8	3.1	3.6	5.0	2.7	2.8	2.8	3.1	3.6	5.8	3.2	3.7	5.8	3.2	3.7	5.7	3.0	3.4	4.7
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
266	268	268	267	271	272	266	268	269	267	278	267	267	268	268	266	271	268	267	271	268
443	402	501	671	727	881	339	218	247	583	572	709	568	506	589	617	517	517	671	754	1287
184	157	162	201	165	184	111	85	67	187	172	166	171	129	123	187	162	152	221	182	181
.7	.7	.7	.7	.7	.7	.8	.8	.8	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7
65.8	71.3	79.7	66.6	74.6	85.7	57.8	50.8	49.9	66.4	72.9	84.0	64.0	69.9	77.0	66.5	73.9	84.5	66.7	80.0	102.6
45.7	49.8	53.9	51.8	59.4	70.4	28.6	21.8	20.9	48.6	56.0	62.8	44.2	46.5	51.0	50.5	57.2	59.1	53.9	58.9	79.2
111.5	121.0	133.6	118.5	133.9	156.2	86.5	72.5	70.8	115.1	129.0	146.8	108.2	116.4	128.0	116.9	131.1	143.6	120.6	138.9	181.8
8.1	8.6	9.2	8.5	9.1	12.2	7.6	7.2	7.5	8.7	9.7	11.2	8.5	8.3	9.2	8.9	9.5	10.9	8.6	9.2	15.4
103.4	112.4	124.5	110.0	124.8	143.9	78.9	65.4	63.3	106.3	119.2	135.6	99.7	108.2	118.8	108.0	121.7	132.6	112.0	129.7	166.4

TABLE H.3 -- REGION 3 - NATIONAL FOREST SYSTEM PROGRAM: SUMMARY BY ALTERNATIVE, 1986, 1990, and 2030

INDICATOR	UNIT OF MEASURE 1/	RECOMMENDED PROGRAM						ALTERNATIVE 1			ALTERNATIVE 2			ALTERNATIVE 3		
		Low Bound			High Bound			Constant			Market			Nonmarket		
		1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
WATER-MINERALS																
INCREASED WATER YIELD	THOUS AF	46.9	40.7	75.9	46.9	51.3	87.4	46.1	46.1	46.1	47.1	55.9	65.6	46.5	45.7	66.9
ENERGY MINERALS PRODUCED	QUADS	1.2	1.2	1.1	1.2	1.2	1.1	1.0	1.0	1.0	1.3	1.3	1.2	1.0	1.0	1.0
NONENERGY MINERALS PROD	MILLION $	487.1	441.5	400.9	487.1	485.1	438.9	470.0	470.0	470.0	470.0	470.0	392.0	470.0	470.0	385.4
RANGE																
PERMITTED GRAZING	MIL AUM	2.4	2.4	2.1	2.4	2.4	2.5	2.4	2.4	2.4	2.5	2.5	2.5	2.4	2.3	2.1
IMPROVED RANGE ALLOTMENTS	PERCENT	65.0	57.0	71.0	65.0	71.0	100.0	66.0	83.0	100.0	66.0	97.0	100.0	66.0	86.0	100.0
RECREATION-WILDERNESS																
RECREATION USE	MIL RVD	19.7	22.7	35.0	19.7	22.7	41.1	22.6	22.6	22.6	23.1	26.3	37.9	23.2	27.0	42.8
WILDERNESS USE	MIL RVD	.6	.7	.9	.6	.9	1.2	.7	.7	.7	.7	.8	.9	.7	.9	1.4
WILDERNESS MGMT	MIL ACRES	2.7	2.9	2.9	2.7	3.1	3.4	2.7	2.7	2.7	2.7	2.7	2.8	2.7	2.8	2.9
TRAIL CONST/RECONST	MILES	5.7	28.0	527.1	5.7	554.3	556.0	11.0	13.0	28.0	75.0	109.0	128.0	111.0	330.0	191.0
TIMBER																
TIMBER OFFERED	BIL BF	.4	.4	.5	.4	.5	.6	.4	.4	.4	.5	.5	.6	.4	.4	.4
TIMBER OFFERED	BIL CF	.1	.1	.1	.1	.1	.2	.1	.1	.1	.1	.1	.1	.1	.1	.1
FUELWOOD	MIL CF	12.7	13.1	12.5	12.7	13.9	13.3	11.3	11.3	11.3	13.5	15.1	17.1	11.0	9.8	10.4
REFORESTATION	THOUS ACRES	11.0	4.0	11.4	11.0	10.2	12.0	8.8	8.8	8.8	13.7	11.8	12.5	12.9	7.7	7.9
TIMBER STAND IMP	THOUS ACRES	58.0	22.0	45.0	58.0	40.0	47.4	40.5	40.5	40.5	63.1	54.2	47.4	59.3	35.2	30.4
WILDLIFE/FISH																
WILDLIFE AND FISH USE	MIL WFUD	.8	.7	1.3	.8	1.0	2.0	.8	.8	.8	.8	.8	.8	.8	.9	1.9
ANADROMOUS FISH COMMERCIAL HARVEST	MIL POUNDS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PROTECTION/SUPPORT																
FIRE MANAGEMENT EFFECTIVENESS INDEX	$/THOU PROT ACRES	1414	1537	1500	1414	1407	1523	1366	1366	1366	1408	1516	1322	1407	1505	1347
TIMBER PURCHASER ROAD CONST/RECONST	MILES	694	592	864	694	825	1023	777	777	777	830	1068	1237	757	676	719
ARTERIAL/COLLECTOR ROAD CONST/RECONST	MILES	52	26	152	52	99	180	62	62	66	90	118	128	86	99	95
HUMAN RESOURCES PROG	THOUS PERSON YRS	.8	.1	.8	.8	.8	.8	.1	0	0	.3	.3	.3	.3	.3	.3
COSTS																
OPERATIONAL	MILLION $	59.2	54.9	86.6	59.2	82.2	89.5	69.3	69.8	70.7	78.3	90.9	108.2	76.1	88.5	106.3
CAPITAL INVESTMENT	MILLION $	38.4	35.1	71.1	38.4	52.9	75.8	43.4	43.8	44.3	56.7	65.5	75.9	49.9	52.3	57.5
TOTAL-NFS	MILLION $	97.7	90.0	157.8	97.7	135.0	165.3	112.8	113.6	114.9	135.0	156.4	184.1	126.0	140.8	163.8
ALLOCATED	MILLION $	5.6	3.1	7.1	5.6	5.3	5.6	5.1	5.3	5.1	9.6	9.2	9.9	8.8	7.2	7.4
APPROPRIATED	MILLION $	92.0	86.9	150.6	92.0	129.7	159.7	107.7	108.4	109.8	125.4	147.3	174.2	117.2	133.5	156.4

1/ ABBREVIATIONS: BIL = Billion, MIL = Million, THOUS =Thousand, IMP = Improvement, PROT = Protected, YRS = Years, BF = Board Feet, CF = Cubic Feet, AUM = Animal Unit Months, PROD = Production, PROG = Program, RVD = Recreation Visitor Days, WFUD = Wildlife and Fish User Days, MGMT = Management, AF = Acre Feet, QUADS = One Quadrillion BTU (British Thermal Units), CONST = Construction, RECONST = Reconstruction

* Indicates no data available

ALTERNATIVE 3A			ALTERNATIVE 4			ALTERNATIVE 5			ALTERNATIVE 6			ALTERNATIVE 7			ALTERNATIVE 8			ALTERNATIVE 9		
High Wilderness			All Resources			Reduced			Implemented Plans			High PNV			1980 RPA			High Productivity		
1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
46.5	45.7	66.9	48.1	54.3	81.5	46.1	34.3	28.9	46.9	51.3	75.9	47.0	54.3	63.0	46.9	51.3	75.9	47.1	55.9	78.8
1.0	1.0	1.0	1.2	1.2	1.2	.9	.9	.8	1.2	1.2	1.2	1.2	1.2	1.1	1.2	1.2	1.2	1.3	1.3	1.2
470.0	470.0	385.4	470.0	470.0	395.0	470.0	444.2	316.0	470.0	470.0	390.8	470.0	470.0	316.0	470.0	470.0	390.8	470.0	470.0	392.0
2.4	2.3	2.1	2.4	2.4	2.3	2.4	2.3	1.7	2.4	2.4	2.4	2.4	2.3	1.7	2.4	2.4	2.3	2.5	2.5	2.5
66.0	86.0	100.0	66.0	92.0	100.0	65.0	71.0	100.0	66.0	93.0	100.0	65.0	71.0	100.0	*	*	*	66.0	97.0	100.0
23.2	27.0	42.4	23.3	27.0	41.8	22.7	22.6	20.9	22.7	24.2	37.8	23.2	27.0	42.8	23.2	27.0	41.8	23.1	25.0	39.5
.7	.9	1.5	.7	.9	1.4	.7	.7	.7	.7	.9	1.2	.7	.9	1.4	.7	.9	1.4	.7	.7	1.3
2.7	2.6	3.4	2.7	2.7	2.8	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.8	2.7	2.7	3.1	2.7	2.7	2.8
111.0	330.0	332.0	80.0	203.0	127.0	.0	.0	.0	40.0	164.0	127.0	101.0	250.0	167.0	90.0	283.0	151.0	108.0	170.0	161.0
.4	.4	.4	.5	.5	.6	.4	.2	.2	.4	.5	.5	.4	.5	.6	.4	.5	.5	.5	.5	.7
.1	.1	.1	.1	.1	.1	.1	0	0	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.2
11.0	9.8	10.4	12.6	14.5	15.3	10.5	5.9	5.9	11.6	13.2	14.1	11.9	14.5	15.3	11.6	13.2	14.1	13.5	15.1	20.6
12.9	7.7	7.9	13.0	11.3	11.6	9.0	5.0	5.0	13.4	10.3	10.6	13.6	11.3	11.6	13.4	10.3	10.6	13.7	11.8	15.0
59.3	35.2	30.4	60.0	51.9	42.8	29.2	16.2	16.2	61.7	47.5	49.5	62.6	51.9	42.8	61.7	47.5	49.5	63.1	54.2	52.1
.8	.9	1.9	.8	.9	1.3	.8	.8	.7	.8	.9	1.5	.8	.9	1.8	.8	.9	1.6	.8	.8	1.1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1407	1505	1347	1418	1336	1323	1362	1362	1362	1409	1342	1323	1418	1336	1323	1418	1336	1323	1408	1516	1332
757	676	719	865	1061	1190	732	406	406	804	911	981	821	1016	1190	804	911	981	830	1068	1333
86	99	95	93	117	125	18	10	10	80	103	110	91	123	124	88	111	112	90	125	243
.3	.3	.3	.3	.3	.3	.8	.8	.8	.3	.3	.3	.1	0	0	.8	.8	.8	.3	.3	.3
76.1	88.5	106.8	78.1	94.2	110.0	75.1	66.6	65.6	77.2	90.5	110.0	74.5	89.6	103.0	82.6	98.2	112.2	78.4	96.2	119.7
49.9	52.3	58.7	54.6	67.0	76.2	39.9	24.4	23.8	51.2	60.8	69.8	53.5	63.6	69.3	52.7	63.7	70.2	57.0	67.0	86.4
126.0	140.8	165.4	132.7	161.2	186.2	115.0	91.0	89.4	128.4	151.3	179.8	128.1	153.2	172.3	135.3	161.9	182.4	135.4	163.2	206.1
8.8	7.2	7.4	9.2	9.0	9.4	11.5	9.6	9.5	9.0	8.2	8.4	7.1	6.7	7.1	14.5	13.6	13.8	9.6	9.2	10.7
117.2	133.5	158.0	123.5	152.2	176.9	103.5	81.5	79.9	119.4	143.1	171.5	120.9	146.5	165.2	120.8	148.3	168.6	125.9	154.0	195.4

TABLE H.4 -- REGION 4 - NATIONAL FOREST SYSTEM PROGRAM: SUMMARY BY ALTERNATIVE, 1986, 1990, and 2030

INDICATOR	UNIT OF MEASURE 1/	RECOMMENDED PROGRAM						ALTERNATIVE 1			ALTERNATIVE 2			ALTERNATIVE 3		
		Low Bound			High Bound			Constant			Market			Nonmarket		
		1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
WATER-MINERALS																
INCREASED WATER YIELD	THOUS AF	104.5	89.6	112.6	104.5	104.4	129.7	76.8	76.8	74.9	113.3	113.3	237.3	72.3	72.3	66.2
ENERGY MINERALS PRODUCED	QUADS	.3	.3	.4	.3	.4	.4	.3	.3	.3	.3	.4	.6	.3	.3	.3
NONENERGY MINERALS PROD	MILLION $	72.8	68.5	87.5	72.8	79.9	98.9	78.7	79.9	82.3	78.7	85.4	106.0	78.7	84.8	94.5
RANGE																
PERMITTED GRAZING	MIL AUM	2.3	2.3	2.3	2.3	2.3	2.5	2.2	2.2	2.2	2.5	2.7	3.2	2.2	2.1	2.1
IMPROVED RANGE ALLOTMENTS	PERCENT	78.0	77.0	97.0	78.0	97.0	100.0	78.0	95.0	100.0	78.0	100.0	100.0	78.0	89.0	89.0
RECREATION-WILDERNESS																
RECREATION USE	MIL RVD	23.5	23.3	34.2	23.5	25.5	40.1	24.0	24.1	24.0	24.0	28.1	34.7	24.0	31.6	42.0
WILDERNESS USE	MIL RVD	1.3	1.5	1.7	1.3	1.9	2.2	1.5	1.6	1.6	1.5	1.7	1.9	1.5	2.0	2.4
WILDERNESS MGMT	MIL ACRES	4.6	5.0	5.0	4.6	5.3	5.7	5.3	5.3	5.3	5.3	5.3	5.3	5.3	7.1	7.8
TRAIL CONST/RECONST	MILES	42.1	55.0	222.6	42.1	491.7	234.8	38.0	41.0	43.0	40.0	35.0	49.0	106.0	408.0	434.0
TIMBER																
TIMBER OFFERED	BIL BF	.4	.3	.5	.4	.5	.7	.2	.2	.2	.4	.5	.8	.3	.2	.2
TIMBER OFFERED	BIL CF	.1	.1	.1	.1	.1	.2	.1	0	0	.1	.1	.2	.1	.1	.1
FUELWOOD	MIL CF	25.4	26.1	32.5	25.4	27.7	34.5	25.0	26.0	23.3	28.0	38.0	61.7	25.0	26.5	23.5
REFORESTATION	THOUS ACRES	21.0	14.0	25.7	21.0	25.1	27.0	19.1	18.6	16.3	23.6	30.9	67.5	22.0	20.6	17.8
TIMBER STAND IMP	THOUS ACRES	14.0	14.0	33.0	14.0	20.6	34.8	11.5	11.4	11.0	17.1	27.3	53.3	12.5	12.4	12.0
WILDLIFE/FISH																
WILDLIFE AND FISH USE	MIL WFUD	4.2	3.3	3.4	4.2	4.7	5.3	4.3	4.3	4.3	4.7	4.8	5.3	5.1	5.5	6.3
ANADROMOUS FISH COMMERCIAL HARVEST	MIL POUNDS	.2	.2	.6	.2	.2	.9	.5	.6	.6	.5	.9	.9	.7	1.5	1.5
PROTECTION/SUPPORT																
FIRE MANAGEMENT EFFECTIVENESS INDEX	$/THOU PROT ACRES	521	564	480	521	523	480	518	518	522	522	522	523	485	497	486
TIMBER PURCHASER ROAD CONST/RECONST	MILES	347	362	446	347	516	528	402	406	407	433	555	804	272	287	262
ARTERIAL/COLLECTOR ROAD CONST/RECONST	MILES	59	55	295	59	217	350	100	100	89	175	270	297	159	208	178
HUMAN RESOURCES PROG	THOUS PERSON YRS	.7	.3	.7	.7	.7	.7	.3	.3	.3	.5	.5	.5	.4	.2	.3
COSTS																
OPERATIONAL	MILLION $	62.2	55.2	96.5	62.2	82.2	99.7	74.6	74.4	75.5	83.3	97.3	116.2	80.7	84.9	97.2
CAPITAL INVESTMENT	MILLION $	41.5	36.8	94.3	41.5	60.3	99.1	43.7	43.9	43.2	52.2	75.9	109.0	50.0	67.3	74.4
TOTAL-NFS	MILLION $	103.7	92.0	190.8	103.7	142.5	198.8	118.3	118.3	118.7	135.5	173.2	225.1	130.7	152.2	171.6
ALLOCATED	MILLION $	4.6	4.2	12.8	4.6	7.3	10.0	4.7	4.8	5.1	7.1	9.5	20.1	5.7	5.6	5.9
APPROPRIATED	MILLION $	99.2	87.8	178.0	99.2	135.2	188.8	113.6	113.5	113.7	128.4	163.7	205.0	125.0	146.6	165.8

1/ ABBREVIATIONS: BIL = Billion, MIL = Million, THOUS =Thousand, IMP = Improvement, PROT = Protected, YRS = Years, BF = Board Feet, CF = Cubic Feet, AUM = Animal Unit Months, PROD = Production, PROG = Program, RVD = Recreation Visitor Days, WFUD = Wildlife and Fish User Days, MGMT = Management, AF = Acre Feet, QUADS = One Quadrillion BTU (British Thermal Units), CONST = Construction, RECONST = Reconstruction

* Indicates no data available

ALTERNATIVE 3A			ALTERNATIVE 4			ALTERNATIVE 5			ALTERNATIVE 6			ALTERNATIVE 7			ALTERNATIVE 8			ALTERNATIVE 9		
High Wilderness			All Resources			Reduced			Implemented Plans			High PNV			1980 RPA			High Productivity		
1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
72.3	72.3	66.2	113.3	113.3	170.5	60.2	60.2	59.9	104.5	104.5	112.6	73.0	73.0	70.9	117.3	117.3	120.0	113.3	113.3	293.3
.3	.3	.3	.3	.3	.5	.3	.3	.2	.3	.4	.4	.3	.3	.3	.3	.3	.3	.3	.4	.6
78.7	84.8	94.5	78.7	84.9	94.5	78.7	76.8	58.7	78.7	85.4	106.0	78.7	85.4	95.7	78.7	85.4	100.6	78.7	85.4	106.0
2.2	2.1	2.1	2.2	2.4	2.5	2.2	1.9	1.8	2.2	2.3	2.4	2.2	2.2	2.2	2.2	2.4	2.6	2.5	2.7	2.9
78.0	89.0	89.0	78.0	95.0	100.0	78.0	89.0	89.0	78.0	95.0	100.0	78.0	100.0	100.0	*	*	*	78.0	100.0	100.0
24.0	31.6	42.0	24.0	29.7	41.9	22.2	21.9	21.5	24.0	28.0	33.9	24.0	29.2	36.0	24.0	28.6	35.7	24.0	29.4	40.8
1.5	2.0	2.4	1.5	2.0	2.4	1.5	1.5	1.5	1.5	1.8	2.2	1.5	1.8	2.1	1.5	1.8	2.1	1.5	1.6	1.6
5.3	7.1	7.8	5.3	6.7	7.8	4.9	4.9	4.9	5.3	5.9	5.9	5.3	6.5	7.8	5.3	6.8	7.8	5.3	5.3	5.3
106.0	408.0	434.0	106.0	239.0	259.0	12.0	12.0	12.0	106.0	283.0	310.0	106.0	210.0	244.0	106.0	319.0	349.0	39.0	214.0	224.0
.3	.2	.2	.4	.5	.6	.2	.2	.2	.4	.4	.4	.3	.2	.2	.4	.4	.4	.4	.5	1.0
.1	.1	.1	.1	.1	.1	0	0	0	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.2
25.0	26.5	23.5	28.0	37.9	53.9	21.9	21.7	21.9	26.6	31.3	36.0	25.0	30.4	28.4	25.2	34.8	36.3	28.0	38.0	68.5
22.0	20.6	17.8	23.6	30.9	48.5	12.2	12.3	12.0	22.0	28.5	31.8	13.5	13.2	13.0	23.2	30.1	30.7	23.6	30.9	83.1
12.5	12.4	12.0	17.1	23.4	42.0	10.2	10.2	9.8	12.3	21.2	28.4	11.5	11.0	11.0	14.2	21.1	30.8	17.1	29.6	58.2
5.1	5.5	6.3	5.0	5.0	5.9	3.4	3.4	3.4	4.4	5.0	5.4	4.4	5.0	5.4	4.4	4.4	5.5	4.7	4.8	5.0
.7	1.5	1.5	.7	1.0	1.2	.3	.3	.3	.7	2.3	2.3	.7	1.4	2.2	.7	1.3	1.4	.5	.9	.9
485	497	486	497	522	525	526	526	521	485	477	474	485	476	473	485	476	473	485	476	472
272	287	262	433	555	579	214	214	276	402	456	461	297	225	278	402	458	491	342	453	773
159	208	178	199	301	236	78	60	47	160	241	242	152	155	153	161	280	258	164	268	338
.4	.2	.3	.5	.5	.5	.7	.7	.6	.3	.4	.4	.2	.2	.3	.6	.7	.7	.4	.2	.2
80.7	84.9	97.5	82.9	90.2	101.4	63.3	63.3	63.7	82.6	98.3	109.5	80.0	84.9	92.3	86.3	104.7	116.7	83.5	101.9	130.2
50.0	67.3	74.7	53.0	84.3	96.7	28.4	27.2	27.6	51.3	81.2	91.3	45.2	54.5	60.4	52.1	89.3	98.2	48.7	75.4	121.8
130.7	152.2	172.2	135.9	174.5	198.1	91.7	90.5	91.2	133.9	179.5	200.8	125.2	139.4	152.6	138.4	194.0	214.9	132.3	177.3	252.0
5.7	5.6	5.9	7.1	9.3	16.1	9.5	9.4	9.0	5.6	8.5	11.3	5.3	5.8	6.5	10.3	13.3	16.1	6.2	8.7	22.4
125.0	146.6	166.3	128.7	165.2	182.0	82.2	81.2	82.2	128.3	171.0	189.5	119.8	133.7	146.1	128.1	180.7	198.8	126.0	168.7	229.6

TABLE H.5 -- REGION 5 - NATIONAL FOREST SYSTEM PROGRAM: SUMMARY BY ALTERNATIVE, 1986, 1990, and 2030

INDICATOR	UNIT OF MEASURE 1/	RECOMMENDED PROGRAM						ALTERNATIVE 1			ALTERNATIVE 2			ALTERNATIVE 3		
		Low Bound			High Bound			Constant			Market			Nonmarket		
		1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
WATER-MINERALS																
INCREASED WATER YIELD	THOUS AF	188.0	202.4	531.2	188.0	326.8	611.9	333.0	333.0	333.0	377.0	543.0	740.0	283.0	306.0	357.0
ENERGY MINERALS PRODUCED	QUADS	.1	.1	.5	.1	.2	.6	0	0	0	.1	.2	.6	0	.1	.1
NONENERGY MINERALS PROD	MILLION $	1.4	1.6	3.1	1.4	2.5	3.5	1.0	1.0	1.0	2.4	2.6	3.2	2.3	2.5	3.5
RANGE																
PERMITTED GRAZING	MIL AUM	.6	.5	.8	.5	.5	.9	.6	.6	.6	.6	.7	.9	.5	.5	.6
IMPROVED RANGE ALLOTMENTS	PERCENT	77.0	68.0	84.0	77.0	68.0	84.0	75.0	82.0	86.0	78.0	85.0	91.0	76.0	82.0	84.0
RECREATION-WILDERNESS																
RECREATION USE	MIL RVD	57.2	56.3	77.1	57.2	61.2	91.0	55.0	55.0	55.0	57.8	59.4	83.0	56.4	59.1	95.5
WILDERNESS USE	MIL RVD	1.9	2.7	4.1	1.9	3.4	5.3	3.1	3.3	4.7	3.1	3.3	4.8	3.9	4.3	7.3
WILDERNESS MGMT	MIL ACRES	3.9	4.2	4.2	3.9	4.4	4.8	3.9	3.9	3.9	3.9	3.9	3.9	3.9	4.3	5.5
TRAIL CONST/RECONST	MILES	140.6	25.0	134.4	140.6	169.9	141.8	131.0	130.7	124.0	108.5	109.1	83.7	332.4	324.0	422.0
TIMBER																
TIMBER OFFERED	BIL BF	1.6	1.0	2.1	1.6	1.8	2.8	1.6	1.6	1.6	2.3	2.5	2.7	1.3	1.4	1.7
TIMBER OFFERED	BIL CF	.3	.2	.3	.3	.3	.4	.3	.3	.3	.4	.4	.4	.2	.2	.3
FUELWOOD	MIL CF	38.1	39.2	45.0	38.1	41.6	47.7	33.5	34.5	39.9	30.9	33.8	43.7	27.9	30.3	55.0
REFORESTATION	THOUS ACRES	28.0	30.0	72.4	28.0	40.0	76.2	34.0	36.4	34.1	47.0	79.5	90.0	30.1	35.2	37.9
TIMBER STAND IMP	THOUS ACRES	33.0	29.0	84.0	33.0	57.9	88.6	48.8	50.9	55.9	63.0	70.0	133.4	48.8	52.6	53.3
WILDLIFE/FISH																
WILDLIFE AND FISH USE	MIL WFUD	4.4	3.5	5.6	4.4	4.9	6.0	4.5	4.5	4.5	4.6	4.6	4.8	4.7	4.9	5.9
ANADROMOUS FISH COMMERCIAL HARVEST	MIL POUNDS	.4	.4	.9	.4	.9	1.3	1.3	1.3	1.3	1.5	1.9	2.7	1.3	1.5	2.4
PROTECTION/SUPPORT																
FIRE MANAGEMENT EFFECTIVENESS INDEX	$/THOU PROT ACRES	5159	5546	4775	5159	4793	4814	4876	4797	4744	4840	4710	4899	4816	4717	4719
TIMBER PURCHASER ROAD CONST/RECONST	MILES	988	718	1396	988	1278	1607	1251	1229	1020	1539	1835	1554	952	1042	1134
ARTERIAL/COLLECTOR ROAD CONST/RECONST	MILES	28	36	139	28	49	231	116	118	111	146	148	138	108	110	109
HUMAN RESOURCES PROG	THOUS PERSON YRS	1.7	0.5	1.6	1.7	1.7	1.6	.5	.5	.5	1.0	1.0	1.0	1.6	1.6	1.6
COSTS																
OPERATIONAL	MILLION $	146.8	140.8	262.2	146.8	186.2	263.0	182.1	185.8	186.5	220.4	234.3	269.8	228.1	238.3	259.5
CAPITAL INVESTMENT	MILLION $	102.0	97.8	195.3	102.0	166.8	213.4	143.6	143.7	122.1	197.6	237.7	219.3	149.5	156.1	146.3
TOTAL-NFS	MILLION $	248.9	238.6	457.5	248.9	353.0	476.4	325.7	329.5	308.6	418.0	472.0	497.5	377.6	394.3	421.4
ALLOCATED	MILLION $	24.9	25.7	52.8	24.9	35.8	41.2	18.3	20.5	22.3	33.1	48.4	59.2	29.2	32.7	33.7
APPROPRIATED	MILLION $	224.0	212.9	404.7	224.0	317.2	435.2	307.4	309.0	286.3	384.9	423.6	438.3	348.4	361.7	387.8

1/ ABBREVIATIONS: BIL = Billion, MIL = Million, THOUS =Thousand, IMP = Improvement, PROT = Protected, YRS = Years, BF = Board Feet, CF = Cubic Feet, AUM = Animal Unit Months, PROD = Production, PROG = Program, RVD = Recreation Visitor Days, WFUD = Wildlife and Fish User Days, MGMT = Management, AF = Acre Feet, QUADS = One Quadrillion BTU (British Thermal Units), CONST = Construction, RECONST = Reconstruction

* Indicates no data available

ALTERNATIVE 3A			ALTERNATIVE 4			ALTERNATIVE 5			ALTERNATIVE 6			ALTERNATIVE 7			ALTERNATIVE 8			ALTERNATIVE 9		
High Wilderness			All Resources			Reduced			Implemented Plans			High PNV			1980 RPA			High Productivity		
1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
283.0	306.0	357.0	370.0	414.0	572.0	237.0	252.0	299.0	317.0	355.0	461.0	387.0	428.0	561.0	413.0	442.0	552.0	377.0	543.0	800.0
0	.1	.1	.1	.1	.2	0	0	0	0	.1	.3	.1	.2	.6	.1	.1	.2	.1	.2	.7
2.3	2.5	3.5	2.2	2.5	3.6	2.6	2.7	3.5	2.3	2.5	3.6	2.4	2.6	3.7	2.2	2.5	3.6	2.8	3.1	3.8
.5	.5	.6	.6	.7	.9	.5	.5	.5	.6	.6	.7	.6	.6	.8	.6	.6	.7	.6	.7	.9
76.0	82.0	84.0	78.0	85.0	90.0	75.0	76.0	74.0	76.0	85.0	98.0	77.0	84.0	89.0	*	*	*	78.0	85.0	91.0
56.4	59.1	95.5	56.9	59.6	94.8	42.6	42.3	39.7	58.1	60.9	98.2	57.3	59.4	88.4	59.4	62.2	98.7	52.6	55.7	88.1
3.9	4.3	7.9	3.1	3.3	4.8	2.5	2.4	2.0	3.3	3.6	5.1	3.1	3.3	5.3	3.1	3.3	4.8	2.8	3.3	3.3
3.9	4.3	6.0	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
332.4	324.0	442.0	230.9	230.3	205.0	33.0	33.6	34.0	242.8	252.5	319.0	173.4	175.8	166.0	209.2	230.4	205.0	113.7	127.9	86.0
1.3	1.4	1.7	2.2	2.4	2.4	1.4	1.5	1.6	1.8	1.9	1.9	1.9	2.0	2.3	1.9	2.0	2.2	2.3	2.6	2.9
.2	.2	.3	.3	.4	.4	.2	.2	.2	.3	.3	.3	.3	.3	.4	.3	.3	.4	.4	.4	.5
27.9	30.3	55.0	31.0	33.8	43.9	29.0	29.2	30.2	31.7	33.7	39.8	37.9	41.0	67.1	33.7	36.8	48.0	30.9	33.8	43.7
30.1	35.2	37.9	47.2	99.6	56.2	29.5	32.8	35.7	44.1	53.4	58.8	44.4	53.6	63.8	45.6	56.8	60.7	47.0	79.5	100.3
48.8	52.6	53.3	59.2	70.7	93.5	35.2	36.9	40.1	53.2	61.1	83.6	54.2	63.1	89.0	53.2	63.5	85.4	63.0	70.0	150.7
4.7	4.9	5.9	4.6	4.7	5.1	4.5	4.3	3.8	4.6	4.7	5.0	4.6	4.7	4.9	4.6	4.7	5.0	4.6	4.6	4.8
1.3	1.5	2.4	1.5	1.9	2.7	1.2	1.2	1.2	1.2	1.5	2.4	1.2	1.5	2.3	1.2	1.5	2.5	1.5	2.3	2.7
4816	4717	4719	4854	4735	4819	5073	5074	5072	4857	4722	4840	4823	4705	4832	4888	4746	4819	4765	4686	4905
952	1042	1134	465	1559	1651	1141	1134	971	1339	1416	1621	1355	1436	1626	1374	1485	1644	1380	1772	1527
108	110	109	138	139	134	84	83	75	139	142	133	123	125	113	127	128	126	124	133	129
1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.0	1.0	1.0
228.1	238.3	259.8	225.9	244.6	275.7	173.5	174.1	178.0	214.1	229.2	263.6	217.9	230.9	265.2	222.3	237.6	275.2	233.5	252.0	304.9
149.5	156.1	147.0	192.4	230.9	192.3	111.8	111.7	100.5	177.5	190.4	177.6	174.1	185.8	174.9	180.6	196.5	180.8	192.9	238.8	235.9
377.6	394.3	422.4	418.3	475.6	480.2	285.3	285.8	278.4	391.6	419.6	453.5	391.9	416.7	449.3	402.9	434.1	468.2	426.4	490.8	540.8
29.2	32.7	33.7	36.5	43.5	50.7	24.4	26.0	29.3	34.0	39.8	46.5	34.0	40.0	48.7	34.4	41.9	47.3	33.1	48.3	65.4
348.4	361.7	388.7	381.8	432.1	429.4	260.9	260.0	249.1	357.7	379.8	407.1	357.9	376.7	400.6	368.5	392.2	420.9	393.3	442.5	475.4

TABLE H.6 -- REGION 6 - NATIONAL FOREST SYSTEM PROGRAM: SUMMARY BY ALTERNATIVE, 1986, 1990, and 2030

INDICATOR	UNIT OF MEASURE 1/	RECOMMENDED PROGRAM						ALTERNATIVE 1			ALTERNATIVE 2			ALTERNATIVE 3		
		Low Bound			High Bound			Constant			Market			Nonmarket		
		1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
WATER-MINERALS																
INCREASED WATER YIELD	THOUS AF	27.5	27.9	60.8	27.5	34.4	70.0	28.0	32.7	34.0	27.6	34.6	53.4	28.1	34.5	56.4
ENERGY MINERALS PRODUCED	QUADS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NONENERGY MINERALS PROD	MILLION $	32.5	30.5	33.4	32.5	33.0	37.8	40.5	40.5	154.5	40.5	52.5	52.4	40.5	41.5	40.5
RANGE																
PERMITTED GRAZING	MIL AUM	.6	.8	.9	.6	.8	.9	.7	.7	.8	.8	.8	.9	.7	.8	.8
IMPROVED RANGE ALLOTMENTS	PERCENT	69.0	68.0	85.0	69.0	85.0	96.0	70.0	83.0	86.0	74.0	92.0	100.0	70.0	90.0	87.0
RECREATION-WILDERNESS																
RECREATION USE	MIL RVD	23.7	22.8	34.5	23.7	25.3	40.2	24.0	24.4	26.9	24.7	25.2	34.5	23.4	25.6	38.1
WILDERNESS USE	MIL RVD	1.1	1.1	2.7	1.1	1.4	3.5	2.0	2.1	2.5	2.1	2.4	3.4	2.0	2.4	3.4
WILDERNESS MGMT	MIL ACRES	4.7	5.0	5.0	4.7	5.3	5.7	4.9	4.9	4.9	4.7	4.7	4.7	4.9	4.9	5.1
TRAIL CONST/RECONST	MILES	322.5	123.3	294.0	322.5	393.4	310.1	250.5	327.5	231.3	308.7	300.8	312.7	344.7	338.0	357.8
TIMBER																
TIMBER OFFERED	BIL BF	5.2	4.1	5.2	5.2	4.5	6.0	4.9	4.9	4.5	5.3	5.5	4.9	4.4	4.5	4.0
TIMBER OFFERED	BIL CF	1.0	.7	1.0	1.0	.8	1.3	.9	.9	.9	1.0	1.1	1.0	.9	.9	.8
FUELWOOD	MIL CF	58.4	60.0	12.5	58.4	63.7	13.3	37.0	37.0	21.5	39.8	40.5	38.6	57.3	57.7	8.3
REFORESTATION	THOUS ACRES	77.0	106.0	120.8	77.0	118.9	127.2	105.9	108.7	95.0	131.0	139.2	134.5	113.4	115.4	97.2
TIMBER STAND IMP	THOUS ACRES	103.0	127.8	172.8	103.0	104.1	181.0	105.9	107.5	115.6	123.4	143.3	159.9	102.9	123.2	129.4
WILDLIFE/FISH																
WILDLIFE AND FISH USE	MIL WFUD	3.9	3.1	3.2	3.9	4.2	5.8	5.2	4.1	5.2	5.3	5.6	6.2	5.4	5.6	6.4
ANADROMOUS FISH COMMERCIAL HARVEST	MIL POUNDS	4.5	3.5	13.7	4.5	3.9	18.0	4.3	4.3	4.3	4.5	5.1	10.3	4.5	5.5	16.0
PROTECTION/SUPPORT																
FIRE MANAGEMENT EFFECTIVENESS INDEX	$/THOU PROT ACRES	1690	1960	1689	1690	1689	1689	1690	1690	1690	1689	1689	1689	1689	1689	1689
TIMBER PURCHASER ROAD CONST/RECONST	MILES	1966	1830	2189	1966	2129	2740	2365	2336	2185	2519	2516	2301	2175	2126	2045
ARTERIAL/COLLECTOR ROAD CONST/RECONST	MILES	64	153	1138	64	792	1228	658	660	672	786	803	849	700	731	753
HUMAN RESOURCES PROG	THOUS PERSON YRS	1.2	.2	.8	1.2	.7	.8	.2	.2	.2	1.7	1.7	1.7	1.7	1.7	1.7
COSTS																
OPERATIONAL	MILLION $	145.3	151.1	247.4	145.3	197.6	247.7	222.2	224.5	230.6	240.8	243.9	256.6	230.0	231.2	266.9
CAPITAL INVESTMENT	MILLION $	184.9	193.9	354.0	184.9	332.9	377.0	333.7	345.3	287.6	383.1	389.9	324.5	313.2	324.2	281.9
TOTAL-NFS	MILLION $	330.2	345.0	601.4	330.2	530.5	624.7	555.9	569.8	518.3	623.9	633.8	581.0	543.2	555.5	548.8
ALLOCATED	MILLION $	43.4	66.9	72.3	43.4	57.0	66.0	58.3	59.5	58.7	66.1	70.3	69.2	57.0	59.6	60.1
APPROPRIATED	MILLION $	286.8	278.1	529.1	286.8	473.5	558.6	497.6	510.3	459.6	557.7	563.5	511.8	486.2	495.9	488.7

1/ ABBREVIATIONS: BIL = Billion, MIL = Million, THOUS =Thousand, IMP = Improvement, PROT = Protected, YRS = Years, BF = Board Feet, CF = Cubic Feet, AUM = Animal Unit Months, PROD = Production, PROG = Program, RVD = Recreation Visitor Days, WFUD = Wildlife and Fish User Days, MGMT = Management, AF = Acre Feet, QUADS = One Quadrillion BTU (British Thermal Units), CONST = Construction, RECONST = Reconstruction

* Indicates no data available

ALTERNATIVE 3A High Wilderness			ALTERNATIVE 4 All Resources			ALTERNATIVE 5 Reduced			ALTERNATIVE 6 Implemented Plans			ALTERNATIVE 7 High PNV			ALTERNATIVE 8 1630 RPA			ALTERNATIVE 9 High Productivity		
1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
27.3	33.7	55.6	28.8	36.4	53.5	21.3	24.9	26.3	28.6	35.1	54.6	28.8	35.8	57.7	29.3	35.7	57.1	27.6	34.6	55.2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40.5	41.5	40.5	40.5	40.5	40.5	31.0	31.0	31.0	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	52.5	52.4
.7	.8	.8	.7	.7	.8	.5	.5	.5	.8	.8	.9	.8	.8	.9	.8	.8	.9	.8	.8	.9
70.0	90.0	87.0	74.0	91.0	100.0	63.0	65.0	67.0	74.0	91.0	99.0	69.0	85.0	96.0	*	*	*	74.0	92.0	100.0
23.4	25.6	38.1	23.7	25.1	32.3	17.9	15.1	29.4	24.3	26.1	39.6	25.2	26.6	38.6	25.1	26.5	38.1	25.2	24.0	48.8
4.0	4.7	6.7	2.1	2.4	3.5	1.6	1.8	2.3	2.0	2.2	3.5	2.0	2.2	3.2	2.0	2.2	3.2	2.5	2.5	3.7
4.9	4.9	5.1	4.7	4.7	4.7	4.7	4.7	4.7	4.9	4.9	5.1	4.9	4.9	5.1	4.9	4.9	5.1	4.7	4.7	4.7
365.6	358.9	380.9	274.9	267.9	310.5	201.1	200.1	204.0	342.8	297.6	312.6	330.7	281.6	265.3	345.7	296.6	279.3	308.7	300.8	312.7
4.4	4.5	4.0	5.3	5.4	4.6	3.4	3.4	3.2	5.1	5.2	4.9	5.3	5.5	4.9	5.5	5.6	5.0	5.3	5.5	5.1
.8	.9	.8	1.0	1.0	1.0	.7	.7	.7	1.0	1.0	1.0	1.0	1.1	1.0	1.1	1.1	1.0	1.0	1.1	1.1
56.9	57.2	7.9	63.1	63.3	13.1	39.9	39.9	38.1	62.1	62.8	13.8	61.2	61.8	14.9	62.8	63.5	13.4	39.8	40.5	39.7
112.1	113.8	95.9	123.4	128.3	125.1	76.5	90.8	69.1	120.3	123.5	109.0	133.2	141.0	132.1	133.8	141.2	133.2	131.2	139.2	139.0
101.7	121.6	127.8	117.5	139.0	151.8	67.3	68.9	76.8	110.6	133.4	153.3	120.7	141.8	159.5	121.4	142.6	160.4	123.4	168.1	208.7
5.4	5.6	6.3	5.4	5.5	6.2	4.2	4.1	4.1	5.3	5.6	6.4	5.3	5.5	6.3	5.3	5.6	6.5	6.6	6.5	9.3
4.5	5.5	16.0	4.6	5.2	11.9	3.4	3.4	3.4	4.4	6.8	17.7	4.5	5.3	15.7	4.5	5.4	15.7	4.5	5.1	15.3
1689	1689	1689	1689	1689	1689	1678	1681	1691	1689	1689	1689	1689	1689	1689	1689	1689	1689	1689	1689	1689
2156	2102	2025	2537	2562	2158	1620	1577	1459	2550	2521	2305	2567	2541	2331	2607	2573	2319	2523	2516	2377
688	717	740	754	765	777	485	474	687	833	844	863	782	813	857	805	814	848	744	828	873
1.7	1.7	1.7	1.6	1.6	1.6	2.1	2.1	2.1	1.7	1.7	1.7	1.5	1.5	1.5	1.1	.3	.1	1.7	1.7	1.7
229.3	230.1	264.9	239.0	242.3	245.7	170.7	171.8	197.6	241.2	243.6	241.6	241.2	244.7	255.6	241.0	235.9	243.3	241.5	254.1	272.5
310.5	320.6	278.6	357.1	378.9	303.4	234.8	231.0	198.1	365.2	378.8	319.8	374.1	392.2	325.4	381.6	398.7	324.3	380.5	398.1	354.9
539.7	550.7	543.5	596.1	621.2	549.1	405.5	402.9	395.7	606.3	622.5	561.3	615.3	637.0	581.1	622.6	634.6	567.6	622.0	652.2	627.4
56.5	59.0	59.5	65.6	69.0	66.3	47.7	48.6	50.1	61.1	63.9	63.5	66.6	70.7	68.4	65.5	61.1	55.9	66.2	70.3	72.7
483.2	491.7	484.0	530.5	552.2	482.8	357.8	354.2	345.7	545.2	558.6	497.8	548.7	566.3	512.7	557.0	573.5	511.7	555.8	581.9	554.8

TABLE H.7 -- REGION 8 - NATIONAL FOREST SYSTEM PROGRAM: SUMMARY BY ALTERNATIVE, 1986, 1990, and 2030

INDICATOR	UNIT OF MEASURE 1/	RECOMMENDED PROGRAM						ALTERNATIVE 1			ALTERNATIVE 2			ALTERNATIVE 3		
		Low Bound			High Bound			Constant			Market			Nonmarket		
		1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
WATER-MINERALS																
INCREASED WATER YIELD	THOUS AF	23.0	21.4	88.8	23.0	28.0	102.3	41.0	41.0	41.0	50.6	64.7	86.0	23.6	26.3	46.7
ENERGY MINERALS PRODUCED	QUADS	.1	.1	.1	.1	.1	.1	0	.1	.1	.1	.1	.1	.1	.1	.1
NONENERGY MINERALS PROD	MILLION $	307.2	298.1	382.2	307.2	335.6	482.4	255.4	238.1	252.4	299.3	279.6	416.8	271.6	251.9	388.8
RANGE																
PERMITTED GRAZING	MIL AUM	.2	.2	.3	.2	.2	.3	.2	.2	.2	.2	.2	.5	.2	.2	.3
IMPROVED RANGE ALLOTMENTS	PERCENT	78.0	63.0	79.0	78.0	79.0	80.0	76.0	76.0	81.0	81.0	82.0	85.0	76.0	64.0	57.0
RECREATION-WILDERNESS																
RECREATION USE	MIL RVD	28.4	28.2	55.6	28.4	30.2	65.4	28.2	28.2	28.2	27.7	30.4	69.3	31.4	35.9	88.4
WILDERNESS USE	MIL RVD	.3	.4	.5	.3	.5	.7	.4	.4	.4	.4	.5	.8	.5	.7	1.3
WILDERNESS MGMT	MIL ACRES	.5	.6	.6	.5	.6	.7	.6	.6	.6	.6	.6	.6	.6	.6	.6
TRAIL CONST/RECONST	MILES	60.2	50.0	283.5	60.2	1533.2	299.0	35.0	35.1	35.1	70.9	76.5	100.0	135.1	187.9	281.2
TIMBER																
TIMBER OFFERED	BIL BF	1.2	1.0	2.8	1.2	1.4	3.6	1.3	1.2	1.0	1.8	1.8	3.7	1.3	1.3	2.0
TIMBER OFFERED	BIL CF	.2	.2	.6	.2	.3	.7	.2	.2	.2	.3	.3	.7	.2	.2	.4
FUELWOOD	MIL CF	5.1	5.2	7.5	5.1	5.5	8.0	8.6	8.6	8.6	6.3	6.8	12.2	4.9	5.0	6.8
REFORESTATION	THOUS ACRES	102.0	90.0	147.6	102.0	106.1	155.4	96.1	96.1	96.1	125.7	141.6	178.2	84.3	86.9	116.7
TIMBER STAND IMP	THOUS ACRES	56.0	49.2	82.2	56.0	61.0	86.7	56.7	56.7	56.7	76.0	88.0	145.0	52.3	53.3	69.9
WILDLIFE/FISH																
WILDLIFE AND FISH USE	MIL WFUD	2.5	2.3	2.8	2.5	3.3	4.3	2.8	2.8	2.8	2.8	3.1	3.8	2.9	3.7	4.7
ANADROMOUS FISH COMMERCIAL HARVEST	MIL POUNDS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PROTECTION/SUPPORT																
FIRE MANAGEMENT EFFECTIVENESS INDEX	$/THOU PROT ACRES	1585	1809	1124	1585	1357	1122	1195	1211	1200	1120	1134	1202	1122	1135	1173
TIMBER PURCHASER ROAD CONST/RECONST	MILES	990	945	2013	990	1364	2383	966	917	1044	1635	1602	2487	1188	1358	1658
ARTERIAL/COLLECTOR ROAD CONST/RECONST	MILES	197	142	544	197	394	715	375	373	336	550	595	773	456	431	423
HUMAN RESOURCES PROG	THOUS PERSON YRS	2.8	2.3	2.8	2.8	2.8	2.8	2.7	2.7	2.7	3.0	3.0	3.0	3.0	3.0	3.0
COSTS																
OPERATIONAL	MILLION $	88.9	81.9	157.1	88.9	132.1	162.3	110.4	110.1	108.1	126.0	136.0	173.0	125.1	132.4	153.7
CAPITAL INVESTMENT	MILLION $	72.7	67.0	164.9	72.7	108.8	165.9	92.1	92.9	93.3	131.3	146.5	194.2	99.5	119.0	132.7
TOTAL-NFS	MILLION $	161.6	148.9	322.0	161.6	240.9	328.2	202.5	203.0	201.4	257.3	282.5	367.2	224.6	251.4	286.4
ALLOCATED	MILLION $	16.9	21.3	63.9	16.9	45.4	49.9	41.1	41.1	40.5	48.8	53.8	63.2	42.5	43.6	47.6
APPROPRIATED	MILLION $	144.7	127.6	258.0	144.7	195.5	278.3	161.4	161.9	160.9	208.5	228.8	303.9	182.2	207.8	238.8

1/ ABBREVIATIONS: BIL = Billion, MIL = Million, THOUS =Thousand, IMP = Improvement, PROT = Protected, YRS = Years, BF = Board Feet, CF = Cubic Feet, AUM = Animal Unit Months, PROD = Production, PROG = Program, RVD = Recreation Visitor Days, WFUD = Wildlife and Fish User Days, MGMT = Management, AF = Acre Feet, QUADS = One Quadrillion BTU (British Thermal Units), CONST = Construction, RECONST = Reconstruction

* Indicates no data available

ALTERNATIVE 3A			ALTERNATIVE 4			ALTERNATIVE 5			ALTERNATIVE 6			ALTERNATIVE 7			ALTERNATIVE 8			ALTERNATIVE 9		
High Wilderness			All Resources			Reduced			Implemented Plans			High PNV			1980 RPA			High Productivity		
1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
23.6	26.3	46.7	50.6	64.7	86.0	21.4	23.9	32.3	38.0	52.6	88.8	26.9	30.9	52.8	38.0	52.6	88.8	50.6	64.7	86.0
.1	.1	.1	.1	.1	.1	0	0	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
271.6	251.9	388.8	332.2	325.8	463.0	201.6	190.7	201.2	265.2	254.6	391.7	269.3	249.6	386.7	265.2	254.6	391.7	299.3	279.6	416.8
.2	.2	.3	.2	.2	.3	.2	.2	.2	.3	.3	.3	.2	.2	.3	.3	.3	.3	.2	.2	.3
76.0	64.0	57.0	79.0	79.0	84.0	75.0	73.0	64.0	80.0	81.0	82.0	78.0	79.0	80.0	*	*	*	81.0	82.0	85.0
31.4	35.9	88.4	30.5	35.4	83.6	20.6	18.1	18.1	29.0	31.6	53.1	29.5	31.3	87.8	29.0	31.6	53.1	29.0	32.8	78.5
.5	.7	1.3	.5	.6	1.1	.3	.3	.3	.4	.5	.9	.5	.6	1.2	.4	.5	.9	.4	.4	1.2
.6	.6	.7	.6	.6	.6	.5	.5	.5	.6	.7	.7	.6	.6	.6	.6	.7	.7	.6	.6	.6
135.1	187.9	281.2	102.8	179.2	269.3	38.2	38.8	40.7	124.7	164.5	177.6	103.6	169.2	211.9	124.7	164.5	177.6	103.6	146.0	231.5
1.3	1.3	2.0	1.7	1.8	2.9	1.2	.9	.9	1.5	1.6	2.8	1.5	1.5	2.2	1.5	1.6	2.8	1.8	2.3	4.1
.2	.2	.4	.3	.3	.6	.2	.1	.2	.2	.3	.6	.2	.3	.4	.2	.3	.6	.3	.4	.8
4.9	5.0	6.8	6.3	6.8	12.2	3.5	3.5	4.3	5.1	5.4	8.8	5.0	5.0	7.0	5.1	5.4	8.8	6.3	6.8	12.2
84.3	86.9	116.7	108.3	114.8	141.0	84.0	64.0	70.6	101.9	110.9	135.8	99.5	106.7	133.9	101.9	110.9	135.8	127.0	161.1	198.0
52.3	53.3	69.9	51.4	61.4	84.5	46.1	36.7	39.3	56.3	59.6	74.3	52.2	54.5	68.6	56.3	59.6	74.3	80.7	100.3	161.6
2.9	3.7	4.7	2.8	3.6	4.8	2.5	1.8	1.9	2.8	3.4	3.9	2.8	3.3	4.0	2.8	3.4	3.9	2.8	2.8	4.2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1122	1135	1173	1122	1163	1218	1406	1660	1647	1122	1163	1199	1170	1123	1142	1122	1163	1199	1120	1134	1202
1188	1358	1658	1489	1613	1969	714	574	522	1356	1530	2164	1262	1399	1634	1356	1530	2164	1626	1922	2324
456	431	423	504	523	518	310	229	200	464	496	509	447	443	461	465	496	509	530	653	730
3.0	3.0	3.0	3.0	3.0	3.0	4.1	4.1	4.1	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
125.1	132.4	153.7	127.7	140.3	168.7	114.9	99.7	102.1	125.5	137.6	165.0	126.8	134.0	155.6	125.5	137.6	165.0	130.2	145.8	191.2
99.5	119.0	132.7	116.8	140.9	154.0	76.0	58.4	57.2	109.4	134.3	153.1	105.7	125.4	136.1	109.4	134.3	153.1	132.0	163.6	200.5
224.6	251.4	286.4	244.5	281.2	322.7	190.9	158.0	159.3	234.9	271.9	318.1	232.4	259.5	291.7	234.9	271.9	318.1	262.2	309.4	391.7
42.5	43.6	47.6	44.7	46.4	51.3	44.2	42.0	43.7	45.1	47.2	50.0	44.7	46.2	49.0	45.1	47.2	50.0	49.3	57.4	67.1
182.2	207.8	238.8	199.8	234.8	271.4	146.7	116.1	115.5	189.8	224.7	268.1	187.7	213.3	242.7	189.8	224.7	268.1	212.9	252.0	324.6

TABLE H.8 -- REGION 9 - NATIONAL FOREST SYSTEM PROGRAM: SUMMARY BY ALTERNATIVE, 1986, 1990, and 2030

INDICATOR	UNIT OF MEASURE 1/	RECOMMENDED PROGRAM						ALTERNATIVE 1			ALTERNATIVE 2			ALTERNATIVE 3		
		Low Bound			High Bound			Constant			Market			Nonmarket		
		1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
WATER-MINERALS																
INCREASED WATER YIELD	THOUS AF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENERGY MINERALS PRODUCED	QUADS	0	0	0.1	0	0.1	0.1	0	0	0	0	.1	0	0	.1	0
NONENERGY MINERALS PROD	MILLION $	472.3	444.9	921.1	472.3	528.6	1021.5	507.0	607.0	607.0	560.0	711.5	1034.2	460.0	611.5	825.2
RANGE																
PERMITTED GRAZING	MIL AUM	0.1	0.1	0.1	0.1	0.1	0.2	.1	.1	.1	.1	.1	.2	.1	.1	.1
IMPROVED RANGE ALLOTMENTS	PERCENT	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
RECREATION-WILDERNESS																
RECREATION USE	MIL RVD	20.7	20.2	29.6	20.7	21.9	35.4	21.4	21.4	21.4	20.8	22.4	34.5	21.8	23.2	38.0
WILDERNESS USE	MIL RVD	1.0	1.2	1.3	1.0	1.6	1.6	1.2	1.2	1.2	1.2	1.5	1.6	1.5	1.5	1.6
WILDERNESS MGMT	MIL ACRES	1.2	1.3	1.3	1.2	1.3	1.5	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
TRAIL CONST/RECONST	MILES	56.5	51.0	94.5	56.5	281.6	99.7	79.0	79.0	79.0	18.0	85.6	78.8	101.6	102.8	106.3
TIMBER																
TIMBER OFFERED	BIL BF	0.7	0.7	1.8	0.7	0.9	2.5	.7	.7	.7	.9	1.2	2.3	.7	.8	1.1
TIMBER OFFERED	BIL CF	0.1	0.1	0.3	0.1	0.2	0.4	.1	.1	.1	.1	.2	.4	.1	.1	.2
FUELWOOD	MIL CF	17.8	18.3	30.0	17.8	19.4	31.8	17.9	17.9	17.9	20.3	25.9	35.2	16.2	18.1	26.1
REFORESTATION	THOUS ACRES	55.0	45.0	140.2	55.0	68.6	147.6	50.6	50.6	50.6	65.9	82.8	165.4	52.7	61.9	78.8
TIMBER STAND IMP	THOUS ACRES	24.0	16.0	86.4	24.0	54.5	91.1	34.7	34.7	34.7	64.3	78.3	85.1	32.5	34.0	42.3
WILDLIFE/FISH																
WILDLIFE AND FISH USE	MIL WFUD	3.2	2.6	4.3	3.2	3.6	6.4	3.2	3.2	3.2	3.2	3.3	4.9	3.3	3.6	6.8
ANADROMOUS FISH COMMERCIAL HARVEST	MIL POUNDS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PROTECTION/SUPPORT																
FIRE MANAGEMENT EFFECTIVENESS INDEX	$/THOU PROT ACRES	514	613	548	514	534	580	514	514	514	514	518	534	508	512	531
TIMBER PURCHASER ROAD CONST/RECONST	MILES	388	325	788	388	387	933	324	324	324	405	545	1088	322	360	519
ARTERIAL/COLLECTOR ROAD CONST/RECONST	MILES	203	153	544	203	394	644	220	220	220	335	565	1137	309	477	789
HUMAN RESOURCES PROG	THOUS PERSON YRS	1.2	0.8	1.4	1.2	1.3	1.4	.9	.9	.9	1.1	1.2	1.3	1.1	1.2	1.4
COSTS																
OPERATIONAL	MILLION $	58.0	50.1	105.2	58.0	83.2	108.6	71.1	71.1	71.1	78.2	93.9	112.7	81.2	89.5	99.9
CAPITAL INVESTMENT	MILLION $	43.8	37.8	143.1	43.8	65.3	145.8	51.9	51.9	49.6	66.6	101.2	148.2	61.7	82.5	96.9
TOTAL-NFS	MILLION $	101.8	87.9	248.3	101.8	148.5	254.5	123.0	123.0	120.8	144.8	195.2	260.9	142.9	172.0	196.8
ALLOCATED	MILLION $	5.9	4.8	31.5	5.9	15.1	24.6	13.2	12.3	12.3	14.8	19.9	28.0	13.7	16.9	18.0
APPROPRIATED	MILLION $	95.9	83.1	216.8	95.9	133.4	229.9	109.8	110.7	108.5	130.0	175.3	232.9	129.2	155.1	178.8

1/ ABBREVIATIONS: BIL = Billion, MIL = Million, THOUS =Thousand, IMP = Improvement, PROT = Protected, YRS = Years, BF = Board Feet, CF = Cubic Feet, AUM = Animal Unit Months, PROD = Production, PROG = Program, RVD = Recreation Visitor Days, WFUD = Wildlife and Fish User Days, MGMT = Management, AF = Acre Feet, QUADS = One Quadrillion BTU (British Thermal Units), CONST = Construction, RECONST = Reconstruction

* Indicates no data available

ALTERNATIVE 3A			ALTERNATIVE 4			ALTERNATIVE 5			ALTERNATIVE 6			ALTERNATIVE 7			ALTERNATIVE 8			ALTERNATIVE 9		
High Wilderness			All Resources			Reduced			Implemented Plans			High PNV			1980 RPA			High Productivity		
1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	.1	0	0	.1	.1	0	0	0	0	.1	0	0	.1	0	0	.1	0	0	.1	0
460.0	611.5	825.2	510.0	711.5	1025.2	510.0	579.9	497.2	510.0	711.0	1021.0	510.0	711.5	1021.2	460.0	611.5	924.2	560.0	711.5	1034.2
.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	*	*	*	100.0	100.0	100.0
21.8	23.2	38.0	21.3	22.9	37.4	21.0	20.9	19.9	21.5	22.9	38.0	21.6	23.0	37.5	21.5	23.0	37.6	20.4	21.2	35.3
1.5	1.5	1.6	1.5	1.5	1.6	1.2	1.2	1.1	1.5	1.5	1.6	1.5	1.5	1.5	1.5	1.5	1.6	1.2	1.4	1.5
1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.5	1.2	1.2	1.2
101.6	102.8	106.3	59.1	85.6	78.8	18.0	18.0	18.0	101.1	105.4	103.9	55.8	58.4	46.1	59.1	62.1	49.0	95.9	83.7	99.9
.7	.8	1.1	.8	1.1	2.1	.5	.5	.5	.7	1.0	1.8	.7	.8	1.1	.7	.8	1.2	.9	1.4	2.6
.1	.1	.2	.1	.2	.3	.1	.1	.1	.1	.2	.3	.1	.1	.2	.1	.1	.2	.1	.2	.4
16.2	18.1	26.1	20.3	25.9	35.2	12.6	12.6	12.6	18.6	23.0	33.0	16.7	18.9	26.8	17.2	23.0	35.2	20.3	25.9	35.2
52.7	61.9	78.8	62.5	82.8	152.2	39.2	39.2	39.2	55.1	79.8	128.8	51.2	60.9	77.7	54.6	63.3	85.6	65.9	99.9	183.9
32.5	34.0	42.3	60.9	78.3	78.3	16.9	16.9	16.9	36.9	76.1	78.3	26.9	29.5	39.9	45.7	48.5	69.1	64.3	94.4	94.5
3.3	3.6	6.8	3.2	3.6	6.0	3.0	2.8	1.7	3.2	3.5	6.5	3.2	3.6	6.4	3.2	3.5	6.3	2.7	2.8	4.6
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
508	512	531	514	518	534	493	493	493	518	532	580	508	512	531	512	517	533	514	518	534
322	360	519	384	545	1001	233	233	233	344	484	847	320	361	513	344	384	564	267	433	798
309	477	789	342	606	1124	5	5	5	323	558	1007	300	421	544	303	493	819	328	476	638
1.1	1.2	1.4	1.1	1.2	1.3	2.0	2.0	2.0	1.3	1.4	1.6	1.2	1.3	1.4	1.2	1.3	1.4	1.1	1.2	1.3
81.2	89.5	99.9	83.6	93.6	110.4	72.4	70.5	70.5	84.3	95.1	113.4	80.7	88.7	96.9	79.1	90.3	100.3	82.1	96.7	114.4
61.7	82.5	96.9	71.1	104.4	143.3	28.2	28.2	27.5	63.6	101.5	131.9	56.5	71.2	79.4	62.5	83.7	100.8	67.7	98.6	123.0
142.9	172.0	196.8	154.7	198.0	253.7	100.6	98.7	98.0	147.9	196.5	245.3	137.2	159.9	176.3	141.6	174.1	201.1	149.8	195.3	237.4
13.7	16.9	18.0	14.8	19.9	26.5	22.1	22.1	21.4	14.6	19.5	25.3	13.7	16.7	16.9	14.3	15.1	19.1	15.0	21.3	30.1
129.2	155.1	178.8	139.9	178.1	227.2	78.5	76.6	76.6	133.3	177.0	220.0	123.5	143.2	159.4	127.2	159.0	182.0	134.8	174.0	207.3

TABLE H.9 -- REGION 10 - NATIONAL FOREST SYSTEM PROGRAM: SUMMARY BY ALTERNATIVE, 1986, 1990, and 2030

INDICATOR	UNIT OF MEASURE 1/	RECOMMENDED PROGRAM						ALTERNATIVE 1			ALTERNATIVE 2			ALTERNATIVE 3		
		Low Bound			High Bound			Constant			Market			Nonmarket		
		1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
WATER-MINERALS																
INCREASED WATER YIELD	THOUS AF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENERGY MINERALS PRODUCED	QUADS	0	0	3.1	0	0	3.2	0	0	0	0	0	3.5	0	0	3.0
NONENERGY MINERALS PROD	MILLION $	78.3	195.4	697.5	78.3	355.6	788.3	84.6	84.6	99.8	84.6	379.9	845.0	84.6	364.7	905.3
RANGE																
PERMITTED GRAZING	MIL AUM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IMPROVED RANGE ALLOTMENTS	PERCENT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RECREATION-WILDERNESS																
RECREATION USE	MIL RVD	4.1	4.4	15.6	4.1	4.7	18.0	3.8	3.8	3.8	3.8	4.9	16.6	4.1	5.4	19.1
WILDERNESS USE	MIL RVD	.5	.7	2.2	.5	.8	2.8	.6	.6	.6	.6	.8	1.4	.6	.8	2.9
WILDERNESS MGMT	MIL ACRES	5.5	5.9	5.9	5.5	6.3	6.8	5.5	5.5	5.5	5.5	5.5	6.8	5.5	7.2	8.6
TRAIL CONST/RECONST	MILES	7.6	23.0	25.2	7.6	71.5	24.4	4.8	4.8	4.8	4.8	5.9	14.0	12.7	14.2	25.3
TIMBER																
TIMBER OFFERED	BIL BF	.4	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.6	.4	.4	.4
TIMBER OFFERED	BIL CF	.1	.1	.1	.1	.1	.2	.1	.1	.1	.1	.1	.1	.1	.1	.1
FUELWOOD	MIL CF	2.5	2.6	2.5	2.5	2.8	2.7	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
REFORESTATION	THOUS ACRES	1.0	1.0	1.7	1.0	1.7	1.8	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1
TIMBER STAND IMP	THOUS ACRES	9.0	9.0	10.8	9.0	10.1	11.4	7.0	7.0	7.0	12.1	12.1	12.1	10.1	10.1	10.1
WILDLIFE/FISH																
WILDLIFE AND FISH USE	MIL WFUD	.5	.5	1.1	.5	.8	1.6	.6	.6	.6	.5	.6	1.5	.5	.6	1.4
ANADROMOUS FISH COMMERCIAL HARVEST	MIL POUNDS	100.8	98.8	120.0	100.8	108.9	157.5	104.0	104.0	104.0	102.6	109.4	155.6	100.6	105.0	130.1
PROTECTION/SUPPORT																
FIRE MANAGEMENT EFFECTIVENESS INDEX	$/THOU PROT ACRES	44	45	45	44	45	45	43	43	43	43	43	43	43	43	44
TIMBER PURCHASER ROAD CONST/RECONST	MILES	105	47	199	105	103	236	254	254	254	255	255	356	255	255	263
ARTERIAL/COLLECTOR ROAD CONST/RECONST	MILES	0	5	190	0	33	225	36	36	36	113	135	245	91	121	202
HUMAN RESOURCES PROG	THOUS PERSON YRS	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
COSTS																
OPERATIONAL	MILLION $	25.2	30.0	50.7	25.2	38.5	52.4	31.5	31.5	31.5	37.2	38.6	54.3	38.2	40.0	55.1
CAPITAL INVESTMENT	MILLION $	42.9	51.0	89.6	42.9	59.2	95.5	82.7	82.7	82.7	98.1	93.9	92.2	90.6	92.7	80.6
TOTAL-NFS	MILLION $	68.1	81.0	140.3	68.1	97.7	147.9	114.2	114.2	114.2	135.3	132.5	146.6	128.8	132.7	135.6
ALLOCATED	MILLION $	.9	1.3	3.4	.9	2.7	2.7	.6	.6	.6	2.9	3.0	3.0	2.4	2.5	2.5
APPROPRIATED	MILLION $	67.2	79.7	136.9	67.2	95.0	145.2	113.6	113.6	113.6	132.4	129.5	143.6	126.4	130.1	133.1

1/ ABBREVIATIONS: BIL = Billion, MIL = Million, THOUS =Thousand, IMP = Improvement, PROT = Protected, YRS = Years, BF = Board Feet, CF = Cubic Feet, AUM = Animal Unit Months, PROD = Production, PROG = Program, RVD = Recreation Visitor Days, WFUD = Wildlife and Fish User Days, MGMT = Management, AF = Acre Feet, QUADS = One Quadrillion BTU (British Thermal Units), CONST = Construction, RECONST = Reconstruction

* Indicates no data available

ALTERNATIVE 3A High Wilderness			ALTERNATIVE 4 All Resources			ALTERNATIVE 5 Reduced			ALTERNATIVE 6 Implemented Plans			ALTERNATIVE 7 High PNV			ALTERNATIVE 8 1980 RPA			ALTERNATIVE 9 High Productivity		
1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	3.0	0	0	3.5	0	0	0	0	0	3.0	0	0	3.3	0	0	3.0	0	0	3.5
84.6	364.7	905.3	84.6	379.9	845.0	84.6	84.6	99.8	84.6	364.7	905.3	84.6	379.9	845.0	84.6	379.9	845.0	84.6	379.9	845.0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4.1	5.4	18.5	4.1	5.4	19.1	3.4	3.3	3.1	4.3	5.7	18.5	3.8	4.9	16.6	7.2	8.6	14.7	3.8	5.0	17.6
.6	.8	3.5	.6	.8	2.9	.6	.6	.6	.6	.8	2.8	.6	.8	1.8	.2	.3	.4	.6	.7	2.1
5.5	7.2	10.7	5.5	7.2	7.2	5.5	5.5	5.5	5.5	6.9	6.9	5.5	5.5	7.0	7.4	7.4	7.4	5.4	5.4	6.8
12.7	14.2	26.4	12.7	14.2	25.3	.0	.0	.0	13.7	15.3	14.4	4.8	5.9	14.0	36.6	32.3	8.5	11.3	12.6	23.4
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.8
.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.4
10.1	10.1	10.1	12.1	12.1	12.1	7.1	7.1	7.1	10.1	10.1	10.1	7.1	7.1	7.1	8.0	8.0	8.0	12.1	12.1	12.1
.5	.6	1.4	.5	.6	1.6	.5	.5	.5	.6	.7	1.5	.5	.6	1.5	.6	1.0	2.7	.5	.6	1.3
100.6	105.0	130.1	103.1	109.9	156.1	99.0	99.0	99.0	102.6	109.4	155.6	102.6	109.4	155.1	100.0	106.8	175.0	102.6	109.4	155.6
43	43	44	44	44	44	43	43	43	44	43	43	43	43	43	*	*	*	43	43	43
253	253	261	255	255	263	254	197	196	255	255	263	254	254	258	247	156	119	255	255	356
91	121	202	114	135	226	28	20	23	92	124	204	89	126	183	34	33	11	113	135	251
.1	.1	.1	.1	.1	.1	.3	.3	.3	.1	.1	.1	.1	.1	.1	.0	.0	.0	.1	.1	.1
38.1	39.9	54.9	38.2	39.8	55.3	35.0	33.9	36.2	37.9	39.6	54.7	32.5	33.8	47.7	45.3	47.1	59.9	37.0	38.4	56.4
90.4	92.5	80.4	99.4	96.1	83.7	71.9	55.6	53.2	93.4	95.5	82.6	74.9	78.6	65.7	90.1	79.7	60.6	98.7	94.6	99.8
128.5	132.3	135.3	137.6	135.8	139.0	106.9	89.5	89.5	131.4	135.1	137.3	107.4	112.5	113.4	135.4	126.8	120.6	135.7	133.0	156.2
2.4	2.5	2.5	2.8	3.0	3.0	6.1	6.1	6.1	2.7	2.8	2.8	1.7	1.7	1.7	.6	.6	.6	2.9	3.0	3.1
126.1	129.8	132.8	134.7	132.9	136.0	100.8	83.4	83.4	128.7	132.3	134.5	105.7	110.7	111.6	134.9	126.2	120.0	132.8	130.0	153.1

TABLE H.10 -- REGION 1 - STATE AND PRIVATE FORESTRY PROGRAM: SUMMARY BY ALTERNATIVE, 1986, 1990, AND 2030

INDICATOR	UNIT OF MEASURE 2/	RECOMMENDED PROGRAM						ALTERNATIVE 1			ALTERNATIVE 2			ALTERNATIVE 3		
		Low Bound			High Bound			Constant			Market			Nonmarket		
		1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
WATER																
IMPROVED WATERSHED CONDITION	THOUS ACRES	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TIMBER																
MANAGEMENT PLANS	THOUS ACRES	22.7	18.0	57.0	22.7	29.9	57.0	32.0	32.0	32.0	38.0	72.2	79.2	31.0	32.0	59.7
DISPERSED RECREATION	THOUS ACRES	2.9	1.0	4.8	2.9	1.5	4.8	4.2	4.2	4.2	4.2	4.8	5.0	4.2	4.1	1.6
WILDLIFE HABITAT IMP	THOUS ACRES	.3	.1	2.4	.3	.2	2.4	.4	.4	.4	1.0	2.3	3.2	.7	1.2	1.7
MAINTAINED WATERSHED CONDITION	THOUS ACRES	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
REFORESTATION (RFA, FIP, ACP)	THOUS ACRES	1.2	1.0	4.8	1.2	3.9	4.8	1.2	1.2	1.2	3.3	5.4	6.2	1.4	1.5	2.6
TIMBER STAND IMP. (RFA, FIP, ACP)	THOUS ACRES	1.2	1.0	7.7	1.2	4.7	7.7	1.2	1.2	1.2	4.2	5.8	9.0	1.1	1.7	2.8
IMPROVED WOOD UTILIZATION	MIL CF	3.1	2.5	9.6	3.1	3.6	9.6	4.5	4.5	4.5	5.1	7.5	8.7	4.5	4.9	11.2
PROGRAM DEVELOPMENT AND MGMT. DEVELOPMENT																
STATE FOREST RESOURCE PLANNING	PERSON YEARS	1.9	1.5	5.0	1.9	3.0	5.0	3.0	3.0	3.0	3.0	6.0	6.0	3.0	4.0	5.0
FOREST PEST MANAGEMENT																
FPM-SURVEY & TECHNICAL ASSISTANCE (S&PF LANDS)	MIL ACRES	10.0	.9	10.0	10.0	7.0	10.0	9.0	9.0	9.0	10.0	10.0	10.0	9.0	9.0	10.0
FPM-SURVEYS ON NFS AND OTHER FEDERAL LANDS	MIL ACRES	19.0	17.8	18.0	19.0	18.0	18.0	19.0	17.0	17.0	23.0	20.0	20.0	19.0	18.0	18.0
COOPERATIVE FIRE PROTECTION																
PROTECTION COST PLUS LOSS	$ PER ACRE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
COSTS																
OPERATIONAL	MILLION $	.4	.3	1.3	.4	.8	1.3	.7	.7	.7	.7	1.8	1.9	.6	1.1	1.0
CAPITAL INVESTMENT	MILLION $	2.0	.9	2.4	2.0	3.6	4.6	2.6	2.5	2.5	3.7	6.1	6.5	2.9	3.7	4.2
TOTAL-S&PF	MILLION $	2.4	1.2	3.7	2.4	4.4	5.9	3.4	3.3	3.2	4.4	7.9	8.5	3.5	4.7	5.2
ALLOCATED 1/	MILLION $	.4	.0	.4	.4	1.5	1.8	.4	.4	.4	1.4	1.8	2.1	.6	.7	1.0
APPROPRIATED	MILLION $	2.0	1.2	3.3	2.0	2.9	4.1	3.0	2.9	2.8	3.0	6.2	6.4	2.9	4.0	4.2

1/ Includes FIP, ACP, and RCFP, all of which are capital investment.

2/ ABBREVIATIONS: THOUS = Thousand, MIL = MILLION, CF = Cubic Feet, IMP = Improvement, RFA = Rural Forestry Assistance, FIP = Forestry Incentives Program, ACP = Agricultural Conservation Program, NFS = National Forest System, RCFP= Rural Community Fire Protection

ALTERNATIVE 3A			ALTERNATIVE 4			ALTERNATIVE 5			ALTERNATIVE 6			ALTERNATIVE 7			ALTERNATIVE 8			ALTERNATIVE 9		
High Wilderness			All Resources			Reduced			Implement Plans			High PNV			1980 RPA			High Productivity		
1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
31.0	32.0	59.7	34.0	45.0	87.5	23.8	23.8	23.8	36.0	50.0	57.0	32.0	32.0	32.0	34.0	45.0	87.5	32.0	32.0	32.0
4.2	4.1	1.6	4.2	4.2	2.5	3.1	3.1	3.1	4.2	4.7	4.8	1.1	1.1	1.1	4.2	4.2	2.5	1.1	1.1	1.1
.7	1.2	1.7	.9	1.7	2.9	.3	.3	.3	.9	2.0	2.4	.4	.4	.4	.9	1.7	2.9	.4	.4	.4
.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1.4	1.5	2.6	1.6	1.8	3.9	.9	.9	.9	2.2	3.9	4.8	1.2	1.2	1.2	1.6	1.8	3.9	1.2	1.2	1.2
1.1	1.7	2.8	1.1	2.3	4.5	.9	.9	.9	3.1	4.7	7.7	1.2	1.2	1.2	1.1	2.3	4.5	1.2	1.2	1.2
4.5	4.9	11.2	4.7	5.9	18.2	3.3	3.4	3.4	7.9	7.1	9.6	4.5	4.5	4.5	4.7	5.9	18.2	4.5	4.5	4.5
3.0	4.0	5.0	3.0	3.0	6.0	2.0	2.0	2.0	1.0	4.0	5.0	3.0	3.0	3.0	3.0	3.0	6.0	3.0	3.0	3.0
9.0	9.0	10.0	9.0	10.0	13.0	7.0	7.0	7.0	10.0	10.0	10.0	9.0	9.0	9.0	9.0	10.0	13.0	9.0	9.0	9.0
19.0	18.0	18.0	21.0	18.0	18.0	13.0	13.0	13.0	22.0	19.0	18.0	17.0	17.0	17.0	18.0	18.0	18.0	20.0	20.0	20.0
1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
.6	1.1	1.0	.6	1.2	1.4	.5	.5	.5	.7	1.4	1.4	.7	.7	.7	.6	1.2	1.4	.7	1.8	1.8
2.9	3.7	4.2	3.1	4.6	5.8	1.9	1.9	1.9	3.5	7.0	7.4	2.5	2.5	2.5	2.9	4.6	5.8	2.5	3.5	3.5
3.5	4.7	5.2	3.7	5.8	7.1	2.4	2.4	2.4	4.2	8.4	8.8	3.2	3.2	3.2	3.6	5.8	7.1	3.1	5.3	5.4
.6	.7	1.0	.8	1.1	1.5	.3	.3	.3	1.2	1.5	1.8	.4	.4	.4	.8	1.1	1.5	.4	.4	.4
2.9	4.0	4.2	2.9	4.7	5.6	2.1	2.1	2.1	3.0	6.9	7.0	2.8	2.8	2.8	2.8	4.7	5.6	2.8	4.9	5.0

TABLE H.11 -- REGION 2 - STATE AND PRIVATE FORESTRY PROGRAM: SUMMARY BY ALTERNATIVE, 1986, 1990, AND 2030

INDICATOR	UNIT OF MEASURE 2/	RECOMMENDED PROGRAM						ALTERNATIVE 1			ALTERNATIVE 2			ALTERNATIVE 3		
		Low Bound			High Bound			Constant			Market			Nonmarket		
		1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
WATER																
IMPROVED WATERSHED CONDITION	THOUS ACRES	5.0	4.0	28.7	5.0	11.3	28.7	7.3	4.6	6.5	11.3	26.9	44.9	8.4	6.0	10.8
TIMBER																
MANAGEMENT PLANS	THOUS ACRES	683.8	500.0	1464.9	683.8	566.1	1464.9	994.2	976.5	720.0	409.5	1071.2	2017.0	895.8	905.8	930.8
DISPERSED RECREATION	THOUS ACRES	2.8	1.0	2.8	2.8	1.4	2.8	4.1	4.3	4.0	12.9	28.8	29.8	7.9	8.1	10.7
WILDLIFE HABITAT IMP	THOUS ACRES	11.4	2.0	6.4	11.4	2.9	6.4	16.5	16.2	13.9	22.8	50.3	52.7	23.1	23.3	26.1
MAINTAINED WATERSHED CONDITION	THOUS ACRES	35.3	28.2	188.6	35.3	53.7	188.6	51.4	52.6	42.7	66.4	157.5	230.5	53.3	54.3	62.3
REFORESTATION (RFA, FIP, ACP)	THOUS ACRES	1.8	1.4	12.4	1.8	4.7	12.4	1.8	1.8	1.9	15.5	15.6	19.4	2.7	2.5	2.3
TIMBER STAND IMP. (RFA, FIP, ACP)	THOUS ACRES	5.3	4.2	28.3	5.3	8.1	28.3	5.3	6.2	7.5	25.8	30.3	48.4	10.5	12.0	14.2
IMPROVED WOOD UTILIZATION	MIL CF	3.2	1.0	6.0	3.2	1.8	6.0	4.7	5.1	5.5	9.6	15.0	26.1	4.7	6.6	7.6
PROGRAM DEVELOPMENT AND MGMT. DEVELOPMENT																
STATE FOREST RESOURCE PLANNING	PERSON YEARS	5.0	4.0	13.5	5.0	4.5	13.5	5.6	5.6	7.2	7.8	17.8	21.5	6.0	5.9	4.8
FOREST PEST MANAGEMENT																
FPM-SURVEY & TECHNICAL ASSISTANCE (S&PF LANDS)	MIL ACRES	3.5	0.3	9.7	3.5	3.8	9.7	4.3	4.3	4.3	3.3	7.7	12.1	3.3	3.7	5.8
FPM-SURVEYS ON NFS AND OTHER FEDERAL LANDS	MIL ACRES	12.0	11.3	12.0	12.0	12.0	12.0	13.8	13.8	13.8	13.8	17.1	19.8	12.0	12.0	12.0
COOPERATIVE FIRE PROTECTION																
PROTECTION COST PLUS LOSS	$ PER ACRE	.50	.56	.60	.50	.56	.60	.50	.49	.48	.50	.56	.60	.50	.52	.54
COSTS																
OPERATIONAL	MILLION $	1.5	.8	2.9	1.5	1.4	2.9	1.7	1.7	1.7	2.4	5.7	6.5	2.0	3.8	3.9
CAPITAL INVESTMENT	MILLION $	2.3	.6	2.8	2.3	3.8	7.0	3.7	3.6	3.7	5.9	9.2	12.2	4.8	5.0	5.5
TOTAL-S&PF	MILLION $	3.8	1.4	5.7	3.8	5.2	9.9	5.3	5.3	5.3	8.3	14.9	18.7	6.9	8.7	9.5
ALLOCATED 1/	MILLION $	.5	.0	.5	.5	.9	1.9	.5	.5	.5	1.3	1.4	1.8	.8	.8	.9
APPROPRIATED	MILLION $	3.3	1.4	5.2	3.3	4.3	8.0	4.8	4.8	4.8	6.9	13.4	16.8	6.0	7.9	8.6

1/ Includes FIP, ACP, and RCFP, all of which are capital investment.

2/ ABBREVIATIONS: THOUS = Thousand, MIL = MILLION, CF = Cubic Feet, IMP = Improvement, RFA = Rural Forestry Assistance, FIP = Forestry Incentives Program, ACP = Agricultural Conservation Program, NFS = National Forest System, RCFP= Rural Community Fire Protection

ALTERNATIVE 3A High Wilderness			ALTERNATIVE 4 All Resources			ALTERNATIVE 5 Reduced			ALTERNATIVE 6 Implement Plans			ALTERNATIVE 7 High PNV			ALTERNATIVE 8 1980 RPA			ALTERNATIVE 9 High Productivity		
1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
8.4	6.0	10.8	4.9	6.0	6.2	5.5	3.4	4.9	11.3	20.4	28.7	7.3	4.6	6.5	4.9	6.0	6.2	7.3	4.6	6.5
895.8	905.8	930.8	751.7	917.7	967.7	745.7	732.4	540.0	566.1	986.9	1464.9	994.2	976.5	720.0	751.7	917.7	967.7	994.2	976.5	720.0
7.9	8.1	10.7	10.3	12.3	16.3	3.0	3.3	3.0	7.7	12.5	15.0	4.1	4.3	4.0	10.3	12.3	16.3	4.1	4.3	4.0
23.1	23.3	26.1	26.3	31.8	34.8	12.4	12.1	10.4	15.3	25.7	34.0	16.5	16.2	13.9	26.3	31.8	34.8	16.5	16.2	13.9
53.3	54.3	62.3	50.6	60.4	71.4	38.5	39.5	32.0	53.7	100.8	188.6	51.4	52.6	42.7	50.6	60.4	71.4	51.4	52.6	42.7
2.7	2.5	2.3	3.7	3.5	2.9	1.3	1.3	1.4	4.7	6.2	12.4	1.8	1.8	1.9	3.7	3.5	2.9	1.8	1.8	1.9
10.5	12.0	14.2	15.2	17.1	19.6	4.0	4.7	5.6	8.1	11.5	28.3	5.3	6.2	7.5	15.2	17.1	19.6	5.3	6.2	7.5
4.7	6.6	7.6	4.7	8.2	10.8	3.5	3.8	4.2	4.7	9.8	16.1	4.7	5.1	5.5	4.7	8.2	10.8	4.7	5.1	5.5
6.0	5.9	4.8	6.6	6.6	4.2	5.6	5.6	5.5	5.1	8.3	13.5	5.6	5.6	7.2	6.6	6.6	4.2	5.6	5.6	7.2
3.3	3.7	5.8	3.1	3.7	5.5	3.2	3.2	3.2	3.5	5.8	9.7	4.3	4.3	4.3	3.1	3.7	5.5	4.3	4.3	4.3
12.0	12.0	12.0	12.0	12.0	12.0	10.3	10.3	10.3	12.0	12.0	12.0	13.8	13.8	13.8	12.0	12.0	12.0	13.8	17.8	21.3
.50	.52	.54	.50	.56	.60	.50	.49	.48	.50	.56	.60	.50	.49	.48	.50	.56	.60	.50	.49	.48
2.0	3.8	3.9	2.0	4.9	4.9	1.3	1.3	1.3	2.5	5.1	5.5	1.7	1.7	1.7	2.0	4.9	4.9	1.8	3.8	1.4
4.8	5.0	5.5	5.7	6.4	7.5	2.7	2.7	2.7	4.6	7.2	10.7	3.7	3.6	3.7	5.7	6.4	7.5	3.7	3.8	4.0
6.9	8.7	9.5	7.7	11.2	12.3	4.0	4.0	4.0	7.1	12.3	16.2	5.3	5.3	5.3	7.7	11.2	12.3	5.5	7.6	5.4
.8	.8	.9	1.2	1.2	1.2	.4	.4	.4	.9	1.2	1.9	.5	.5	.5	1.2	1.2	1.2	.5	.5	.5
6.0	7.9	8.6	6.4	10.1	11.1	3.6	3.6	3.6	6.2	11.1	14.3	4.8	4.8	4.8	6.4	10.1	11.1	5.0	7.1	4.9

TABLE H.12 -- REGION 3 - STATE AND PRIVATE FORESTRY PROGRAM: SUMMARY BY ALTERNATIVE, 1986, 1990, AND 2030

INDICATOR	UNIT OF MEASURE 2/	RECOMMENDED PROGRAM						ALTERNATIVE 1			ALTERNATIVE 2			ALTERNATIVE 3		
		Low Bound			High Bound			Constant			Market			Nonmarket		
		1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
WATER																
IMPROVED WATERSHED CONDITION	THOUS ACRES	.8	.6	1.5	.8	1.5	1.5	1.0	1.0	1.0	1.4	2.1	2.5	1.1	1.2	1.3
TIMBER																
MANAGEMENT PLANS	THOUS ACRES	42.9	34.3	85.0	42.9	75.0	85.0	47.0	47.0	47.0	56.4	135.0	135.0	50.0	61.0	66.0
DISPERSED RECREATION	THOUS ACRES	3.2	2.6	4.5	3.2	4.5	4.5	2.8	2.8	2.8	2.8	6.7	6.7	2.5	3.0	3.3
WILDLIFE HABITAT IMP	THOUS ACRES	3.7	3.0	7.5	3.7	7.5	7.5	4.0	4.0	4.0	4.8	23.5	23.5	4.2	5.7	5.7
MAINTAINED WATERSHED CONDITION	THOUS ACRES	42.9	34.3	73.9	42.9	65.2	73.9	40.9	40.9	40.9	49.1	117.4	117.4	43.5	53.1	57.4
REFORESTATION (RFA, FIP, ACP)	THOUS ACRES	.2	.2	.6	.2	.6	.6	.2	.2	.2	.6	1.2	1.2	.5	.5	.5
TIMBER STAND IMP. (RFA, FIP, ACP)	THOUS ACRES	1.5	1.2	1.9	1.5	1.9	1.9	1.5	1.5	1.5	4.0	4.0	4.0	1.7	1.7	1.7
IMPROVED WOOD UTILIZATION	MIL CF	.6	.5	1.3	.6	1.1	1.3	.8	.8	.8	1.0	1.3	1.3	.9	.9	.9
PROGRAM DEVELOPMENT AND MGMT. DEVELOPMENT																
STATE FOREST RESOURCE PLANNING	PERSON YEARS	3.2	2.6	4.7	3.2	4.7	4.7	4.2	4.2	4.2	5.0	13.4	13.4	4.5	5.3	5.4
FOREST PEST MANAGEMENT																
FPM-SURVEY & TECHNICAL ASSISTANCE (S&PF LANDS)	MIL ACRES	1.5	.1	2.3	1.5	2.3	2.3	1.3	1.3	1.3	1.6	2.0	2.0	1.4	1.4	1.4
FPM-SURVEYS ON NFS AND OTHER FEDERAL LANDS	MIL ACRES	10.0	9.4	10.7	10.0	10.7	10.7	9.7	9.7	9.7	11.6	13.0	13.0	9.8	10.2	10.2
COOPERATIVE FIRE PROTECTION																
PROTECTION COST PLUS LOSS	$ PER ACRE	.26	.30	.26	.26	.26	.26	.26	.25	.25	.26	.29	.31	.26	.28	.28
COSTS																
OPERATIONAL	MILLION $	.5	.2	.7	.5	.6	.7	.2	.2	.2	.4	.6	.6	.3	.4	.4
CAPITAL INVESTMENT	MILLION $	1.1	.6	1.4	1.1	2.2	2.2	1.6	1.6	1.6	2.1	3.7	3.7	1.8	2.1	2.1
TOTAL-S&PF	MILLION $	1.6	.8	2.1	1.6	2.8	2.9	1.9	1.9	1.8	2.5	4.3	4.3	2.0	2.5	2.5
ALLOCATED 1/	MILLION $	.1	.0	.1	.1	.2	.2	.1	.1	.1	.3	.3	.3	.2	.2	.2
APPROPRIATED	MILLION $	1.5	.8	2.0	1.5	2.6	2.8	1.7	1.7	1.7	2.2	4.0	4.0	1.9	2.3	2.3

1/ Includes FIP, ACP, and RCFP, all of which are capital investment.

2/ ABBREVIATIONS: THOUS = Thousand, MIL = MILLION, CF = Cubic Feet, IMP = Improvement, RFA = Rural Forestry Assistance, FIP = Forestry Incentives Program, ACP = Agricultural Conservation Program, NFS = National Forest System, RCFP= Rural Community Fire Protection

ALTERNATIVE 3A High Wilderness			ALTERNATIVE 4 All Resources			ALTERNATIVE 5 Reduced			ALTERNATIVE 6 Implement Plans			ALTERNATIVE 7 High PNV			ALTERNATIVE 8 1980 RPA			ALTERNATIVE 9 High Productivity		
1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
1.1	1.2	1.3	1.5	1.5	1.5	.7	.7	.7	1.2	1.5	1.5	1.0	1.0	1.0	1.5	1.5	1.5	1.0	1.0	1.0
50.0	61.0	66.0	52.6	75.0	85.0	37.2	37.2	37.2	54.0	75.0	85.0	50.0	61.0	66.0	52.6	75.0	85.0	50.0	61.0	66.0
2.5	3.0	3.3	2.6	3.7	4.2	1.9	1.9	1.9	3.7	3.7	4.2	2.5	3.0	3.3	2.6	3.7	4.2	2.5	3.0	3.3
4.2	5.7	5.7	4.5	7.5	7.5	3.2	3.2	3.2	4.6	7.5	7.5	4.2	5.7	5.7	4.5	7.5	7.5	4.2	5.7	5.7
43.5	53.1	57.4	45.8	65.2	73.9	32.4	32.4	32.4	65.2	65.2	774.5	43.5	53.1	57.4	45.8	65.2	73.9	43.5	53.1	57.4
.5	.5	.5	.6	.6	.6	.4	.4	.4	.6	.6	.6	.5	.5	.5	.6	.6	.6	.5	.5	.5
1.7	1.7	1.7	1.9	1.9	1.9	1.2	1.2	1.2	1.9	1.9	1.9	1.7	1.7	1.7	1.9	1.9	1.9	1.7	1.7	1.7
.9	.9	.9	.9	1.1	1.1	.5	.5	.5	1.0	1.1	1.3	.8	.8	.8	.9	1.1	1.1	.8	.8	.8
4.5	5.3	5.4	4.5	6.6	5.9	2.8	2.8	2.8	4.7	8.7	9.0	4.2	4.2	4.2	4.5	6.6	5.9	4.2	4.2	4.2
1.4	1.4	1.4	1.5	1.5	1.5	1.0	1.0	1.0	1.5	1.5	1.5	1.4	1.4	1.4	1.5	1.5	1.5	1.4	1.4	1.4
9.8	10.2	10.2	10.2	10.7	10.7	7.3	7.3	7.3	10.0	10.7	10.7	10.2	10.2	10.2	10.0	10.7	10.7	10.2	10.2	12.2
.26	.28	.28	.25	.25	.25	.26	.25	.25	.26	.26	.26	.26	.25	.25	.25	.25	.25	.26	.25	.25
.3	.4	.4	.3	.5	.5	.2	.2	.2	.3	.5	.5	.3	.4	.4	.3	.5	.5	.3	.4	.4
1.8	2.1	2.1	1.9	2.7	2.7	1.2	1.2	1.2	1.9	2.7	2.8	1.8	2.1	2.0	1.9	2.7	2.7	1.8	2.1	2.2
2.0	2.5	2.5	2.3	3.1	3.2	1.4	1.4	1.4	2.2	3.2	3.3	2.0	2.5	2.4	2.2	3.1	3.2	2.0	2.5	2.6
.2	.2	.2	.2	.2	.2	.1	.1	.1	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2
1.9	2.3	2.3	2.0	2.9	2.9	1.3	1.3	1.3	2.0	3.0	3.1	1.8	2.3	2.3	2.0	2.9	2.9	1.8	2.3	2.4

TABLE H.13 -- REGION 4 - STATE AND PRIVATE FORESTRY PROGRAM: SUMMARY BY ALTERNATIVE, 1986, 1990, AND 2030

INDICATOR	UNIT OF MEASURE 2/	RECOMMENDED PROGRAM						ALTERNATIVE 1			ALTERNATIVE 2			ALTERNATIVE 3		
		Low Bound			High Bound			Constant			Market			Nonmarket		
		1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
WATER																
IMPROVED WATERSHED CONDITION	THOUS ACRES	.0	.0	7.5	.0	7.5	7.5	.0	.0	.0	7.5	7.5	7.5	6.0	6.0	6.0
TIMBER																
MANAGEMENT PLANS	THOUS ACRES	8.0	6.4	16.0	8.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	8.0	8.0	8.0
DISPERSED RECREATION	THOUS ACRES	7.0	5.6	11.0	7.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	7.0	7.0	7.0
WILDLIFE HABITAT IMP	THOUS ACRES	.1	.1	.2	.1	.2	.2	.1	.1	.1	.2	.2	.2	.2	.2	.2
MAINTAINED WATERSHED CONDITION	THOUS ACRES	6.0	4.8	6.0	6.0	6.0	6.0	592.0	592.0	592.0	6.0	6.0	6.0	296.0	296.0	296.0
REFORESTATION (RFA, FIP, ACP)	THOUS ACRES	1.4	1.1	.2	1.4	1.4	.2	1.4	1.4	.1	1.4	1.4	.2	.7	.7	.1
TIMBER STAND IMP. (RFA, FIP, ACP)	THOUS ACRES	.2	.2	.3	.2	.3	.3	.2	.2	.2	.3	.3	.3	.1	.1	.1
IMPROVED WOOD UTILIZATION	MIL CF	.6	.5	.9	.6	.9	.9	.8	.8	.8	.9	.9	.9	.8	.8	.8
PROGRAM DEVELOPMENT AND MGMT. DEVELOPMENT																
STATE FOREST RESOURCE PLANNING	PERSON YEARS	1.8	1.4	2.8	1.8	2.8	2.8	2.6	2.6	2.6	3.0	2.8	2.8	2.1	2.0	1.4
FOREST PEST MANAGEMENT																
FPM-SURVEY & TECHNICAL ASSISTANCE (S&PF LANDS)	MIL ACRES	1.5	.1	3.2	1.5	1.5	3.2	1.0	1.0	1.0	2.0	3.2	3.2	1.0	2.1	2.1
FPM-SURVEYS ON NFS AND OTHER FEDERAL LANDS	MIL ACRES	14.0	13.1	18.0	14.0	12.0	18.0	11.0	11.0	11.0	15.0	15.0	15.0	9.5	9.5	9.5
COOPERATIVE FIRE PROTECTION																
PROTECTION COST PLUS LOSS	$ PER ACRE	.17	.17	.16	.17	.17	.16	.78	.76	.71	.78	.81	.89	.78	.79	.80
COSTS																
OPERATIONAL	MILLION $	.6	.5	.9	.6	.6	.9	.6	.6	.6	.7	1.1	1.5	.8	.8	.8
CAPITAL INVESTMENT	MILLION $	1.2	.7	1.5	1.2	1.7	2.0	1.5	1.6	1.6	1.9	2.6	2.8	1.6	1.6	1.6
TOTAL-S&PF	MILLION $	1.8	1.2	2.4	1.8	2.3	2.9	2.2	2.2	2.2	2.6	3.7	4.3	2.3	2.4	2.4
ALLOCATED 1/	MILLION $	.1	.0	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
APPROPRIATED	MILLION $	1.7	1.2	2.3	1.7	2.2	2.8	2.1	2.2	2.2	2.5	3.6	4.2	2.2	2.3	2.3

1/ Includes FIP, ACP, and RCFP, all of which are capital investment.

2/ ABBREVIATIONS: THOUS = Thousand, MIL = MILLION, CF = Cubic Feet, IMP = Improvement, RFA = Rural Forestry Assistance, FIP = Forestry Incentives Program, ACP = Agricultural Conservation Program, NFS = National Forest System, RCFP= Rural Community Fire Protection

ALTERNATIVE 3A High Wilderness			ALTERNATIVE 4 All Resources			ALTERNATIVE 5 Reduced			ALTERNATIVE 6 Implement Plans			ALTERNATIVE 7 High PNV			ALTERNATIVE 8 1980 RPA			ALTERNATIVE 9 High Productivity		
1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
6.0	6.0	6.0	7.5	7.5	7.5	.0	.0	.0	7.5	7.5	7.5	.0	.0	.0	7.5	7.5	7.5	.0	.0	.0
8.0	8.0	8.0	16.0	16.0	16.0	8.0	8.0	8.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
7.0	7.0	7.0	11.0	11.0	11.0	7.0	7.0	7.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
.2	.2	.2	.2	.2	.2	.1	.1	.1	.2	.2	.2	.1	.1	.1	.2	.2	.2	.1	.1	.1
296.0	296.0	296.0	592.0	592.0	592.0	296.0	296.0	296.0	592.0	592.0	592.0	592.0	592.0	592.0	592.0	592.0	592.0	592.0	592.0	592.0
.7	.7	.1	1.4	1.4	.2	.7	.7	.1	1.4	1.4	.2	1.4	1.4	.1	1.4	1.4	.2	1.4	1.4	.1
.1	.1	.1	.3	.3	.3	.2	.2	.2	.3	.3	.3	.2	.2	.2	.3	.3	.3	.2	.2	.2
.8	.8	.8	.8	.8	.8	.6	.6	.6	.9	.9	.9	.8	.8	.8	.8	.8	.8	.8	.8	.8
2.1	2.0	1.4	1.4	1.6	.4	1.8	1.8	1.8	3.0	2.8	2.8	2.6	2.6	2.6	1.4	1.6	.4	2.6	2.6	2.6
1.0	2.1	2.1	1.4	3.2	3.2	.8	.8	.8	1.5	3.2	3.2	1.0	1.0	1.0	1.4	3.2	3.2	1.0	1.0	1.0
9.5	9.5	9.5	8.0	8.0	8.0	8.0	8.0	8.0	14.0	14.0	14.0	11.0	11.0	11.0	8.0	8.0	8.0	15.0	15.0	15.0
.78	.79	.80	.50	.50	.50	.78	.76	.71	.17	.17	.16	.78	.76	.71	.50	.50	.50	.78	.76	.71
.8	.8	.8	.8	.9	1.1	.6	.6	.6	.7	1.0	1.0	.7	.7	.7	.7	.8	.9	.8	1.1	1.8
1.6	1.6	1.6	1.8	2.1	2.2	1.2	1.2	1.2	2.0	2.4	2.4	1.6	1.6	1.6	1.6	1.7	1.7	1.7	2.0	2.2
2.3	2.4	2.4	2.7	2.9	3.3	1.8	1.8	1.8	2.7	3.4	3.3	2.3	2.3	2.3	2.4	2.6	2.6	2.5	3.1	4.0
.1	.1	.1	.1	.1	.1	0	0	0	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
2.2	2.3	2.3	2.6	2.8	3.2	1.7	1.7	1.7	2.6	3.2	3.2	2.2	2.2	2.2	2.2	2.5	2.5	2.4	3.1	3.9

TABLE H.14 -- REGION 5 - STATE AND PRIVATE FORESTRY PROGRAM: SUMMARY BY ALTERNATIVE, 1986, 1990, AND 2030

INDICATOR	UNIT OF MEASURE 2/	RECOMMENDED PROGRAM						ALTERNATIVE 1			ALTERNATIVE 2			ALTERNATIVE 3		
		Low Bound			High Bound			Constant			Market			Nonmarket		
		1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
WATER																
IMPROVED WATERSHED CONDITION	THOUS ACRES	.0	.0	130.0	.0	75.0	130.0	5.0	5.0	5.0	5.0	150.0	260.0	10.0	10.0	10.0
TIMBER																
MANAGEMENT PLANS	THOUS ACRES	20.0	16.0	71.7	20.0	71.7	71.7	35.0	35.0	35.0	35.0	50.0	61.5	35.0	42.5	42.2
DISPERSED RECREATION	THOUS ACRES	1.0	.8	2.2	1.0	2.1	2.1	2.5	2.5	2.5	25.0	50.0	52.5	20.0	26.2	28.7
WILDLIFE HABITAT IMP	THOUS ACRES	1.0	.8	13.5	1.0	13.5	13.5	5.0	5.0	5.0	15.0	26.5	35.5	15.8	15.8	18.3
MAINTAINED WATERSHED CONDITION	THOUS ACRES	5.0	4.0	50.3	5.0	50.2	50.3	20.0	20.0	20.0	25.0	50.0	55.0	20.0	35.0	35.0
REFORESTATION (RFA, FIP, ACP)	THOUS ACRES	7.2	5.8	24.3	7.2	11.8	24.3	7.2	7.2	7.2	50.7	50.7	50.7	28.9	28.9	28.9
TIMBER STAND IMP. (RFA, FIP, ACP)	THOUS ACRES	5.6	4.5	13.0	5.6	12.7	13.0	5.6	5.6	5.6	42.9	48.0	47.8	24.2	26.8	26.7
IMPROVED WOOD UTILIZATION	MIL CF	4.5	3.6	22.5	4.5	7.1	22.5	7.2	9.0	9.0	9.0	27.0	26.5	8.4	18.0	17.7
PROGRAM DEVELOPMENT AND MGMT. DEVELOPMENT																
STATE FOREST RESOURCE PLANNING	PERSON YEARS	2.5	2.0	2.1	2.5	2.1	2.1	4.5	4.5	4.5	4.7	10.0	10.0	3.1	3.0	2.1
FOREST PEST MANAGEMENT																
FPM-SURVEY & TECHNICAL ASSISTANCE (S&PF LANDS)	MIL ACRES	3.6	.3	2.9	3.6	2.0	2.9	3.0	3.0	3.0	3.5	4.2	5.4	3.3	3.4	4.2
FPM-SURVEYS ON NFS AND OTHER FEDERAL LANDS	MIL ACRES	14.0	13.1	21.1	14.0	14.5	21.1	12.0	12.0	12.0	15.1	16.5	17.6	13.3	13.8	16.9
COOPERATIVE FIRE PROTECTION																
PROTECTION COST PLUS LOSS	$ PER ACRE	1.90	2.00	2.61	1.90	2.10	2.61	2.97	2.89	2.61	2.97	3.05	3.26	2.97	2.95	2.92
COSTS																
OPERATIONAL	MILLION $	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.4	.5	.1	.1	.1
CAPITAL INVESTMENT	MILLION $	3.9	.9	3.6	3.9	4.2	5.6	3.6	3.6	3.6	10.5	15.0	15.7	7.0	8.9	9.2
TOTAL-S&PF	MILLION $	4.0	1.0	3.7	4.0	4.3	5.7	3.7	3.7	3.7	10.6	15.4	16.2	7.1	9.0	9.4
ALLOCATED 1/	MILLION $	.7	.0	.7	.7	1.2	1.5	.7	.7	.7	6.9	8.0	8.0	3.8	4.3	4.3
APPROPRIATED	MILLION $	3.3	1.0	3.0	3.3	3.1	4.2	3.0	3.0	3.0	3.7	7.4	8.3	3.3	4.7	5.0

1/ Includes FIP, ACP, and RCFP, all of which are capital investment.

2/ ABBREVIATIONS: THOUS = Thousand, MIL = MILLION, CF = Cubic Feet, IMP = Improvement, RFA = Rural Forestry Assistance, FIP = Forestry Incentives Program, ACP = Agricultural Conservation Program, NFS = National Forest System, RCFP= Rural Community Fire Protection

ALTERNATIVE 3A High Wilderness			ALTERNATIVE 4 All Resources			ALTERNATIVE 5 Reduced			ALTERNATIVE 6 Implement Plans			ALTERNATIVE 7 High PNV			ALTERNATIVE 8 1980 RPA			ALTERNATIVE 9 High Productivity		
1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
10.0	10.0	10.0	15.0	16.0	16.0	.0	.0	.0	60.0	75.0	130.0	60.0	75.0	130.0	15.0	16.0	16.0	60.0	75.0	130.0
35.0	42.5	42.2	35.0	50.0	61.5	20.0	20.0	20.0	51.7	71.7	71.7	51.7	71.7	71.7	35.0	50.0	61.5	51.7	71.7	71.7
20.0	26.2	28.7	25.0	50.0	52.5	1.0	1.0	1.0	1.1	2.1	2.2	1.1	2.1	2.2	25.0	50.0	52.5	1.1	2.1	2.2
15.8	15.8	18.3	15.0	26.5	35.5	1.0	1.0	1.0	10.5	13.5	13.5	10.5	13.5	13.5	15.0	26.5	35.5	10.5	13.5	13.5
20.0	35.0	35.0	25.0	50.0	55.0	5.0	5.0	5.0	50.2	50.2	50.3	50.2	50.2	50.3	25.0	50.0	55.0	50.2	50.2	50.3
28.9	28.9	28.9	50.7	50.7	50.7	4.9	4.9	4.9	7.4	11.8	24.3	7.4	11.8	24.3	50.7	50.7	50.7	7.4	11.8	24.3
24.2	26.8	26.7	42.9	48.0	47.8	4.2	4.2	4.2	4.5	12.7	13.0	4.5	12.7	13.0	42.9	48.0	47.8	4.5	12.7	13.0
8.4	18.0	17.7	9.0	27.0	26.5	4.5	4.5	4.5	12.6	17.4	22.4	19.9	17.4	22.5	9.0	27.0	26.5	19.9	17.4	22.5
3.1	3.0	2.1	3.8	4.7	2.0	2.5	2.5	2.5	8.1	8.6	8.6	2.1	2.1	2.1	3.8	4.7	2.0	2.1	2.1	2.1
3.3	3.4	4.2	3.8	3.9	5.0	2.2	2.2	2.2	3.6	3.7	4.7	3.6	3.7	4.7	3.8	3.9	5.0	3.6	3.7	4.7
13.3	13.8	16.9	14.7	16.2	17.9	9.1	9.1	9.1	14.5	15.1	19.0	14.5	15.1	19.0	14.5	15.9	20.3	15.1	16.9	19.4
2.97	2.95	2.92	6.00	6.40	6.40	2.97	2.89	2.61	4.85	5.90	6.90	2.97	2.89	2.61	6.00	6.40	6.40	2.97	2.89	2.61
.1	.1	.1	.1	.1	.1	.1	.1	.1	.3	.3	.4	.1	.1	.1	.1	.1	.2	.1	.2	.2
7.0	8.9	9.2	10.4	14.2	14.5	2.6	2.7	2.7	6.1	7.6	8.9	4.7	5.8	6.3	10.4	14.2	14.8	4.7	5.9	6.4
7.1	9.0	9.4	10.5	14.3	14.7	2.7	2.7	2.7	6.4	8.0	9.3	4.8	5.9	6.5	10.5	14.3	14.9	4.8	6.1	6.6
3.8	4.3	4.3	6.9	7.9	8.0	.5	.5	.5	1.0	1.2	1.5	.9	1.2	1.5	6.9	7.9	8.0	.9	1.2	1.5
3.3	4.7	5.0	3.6	6.4	6.7	2.2	2.2	2.2	5.5	6.7	7.7	3.8	4.7	4.9	3.6	6.4	7.0	3.9	4.9	5.0

TABLE H.15 -- REGION 6 - STATE AND PRIVATE FORESTRY PROGRAM: SUMMARY BY ALTERNATIVE, 1986, 1990, AND 2030

INDICATOR	UNIT OF MEASURE 2/	RECOMMENDED PROGRAM						ALTERNATIVE 1			ALTERNATIVE 2			ALTERNATIVE 3		
		Low Bound			High Bound			Constant			Market			Nonmarket		
		1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
WATER																
IMPROVED WATERSHED CONDITION	THOUS ACRES	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	96.0	.0	.0	.0	.0
TIMBER																
MANAGEMENT PLANS	THOUS ACRES	79.8	49.8	188.4	79.8	62.2	188.4	84.5	84.5	84.5	53.2	241.0	229.4	53.2	142.0	132.7
DISPERSED RECREATION	THOUS ACRES	15.9	9.3	36.7	15.9	11.6	36.7	15.8	15.8	15.8	10.0	47.7	47.7	10.0	24.3	24.3
WILDLIFE HABITAT IMP	THOUS ACRES	4.7	3.8	12.8	4.7	4.2	12.8	5.6	5.6	5.6	3.6	16.2	16.2	3.6	6.7	6.7
MAINTAINED WATERSHED CONDITION	THOUS ACRES	96.5	77.2	365.0	96.5	85.0	365.0	115.4	115.4	115.4	72.7	455.0	455.0	72.7	145.5	145.5
REFORESTATION (RFA, FIP, ACP)	THOUS ACRES	14.9	11.9	41.9	14.9	41.1	41.9	14.9	14.9	14.9	36.1	54.0	47.7	18.3	25.0	21.8
TIMBER STAND IMP. (RFA, FIP, ACP)	THOUS ACRES	12.3	9.8	22.6	12.3	19.5	22.6	12.3	12.3	12.3	18.1	25.8	26.5	14.8	20.9	18.1
IMPROVED WOOD UTILIZATION	MIL CF	17.3	8.7	42.6	17.3	10.9	42.6	19.0	19.0	19.0	9.3	52.8	52.8	9.3	29.2	29.2
PROGRAM DEVELOPMENT AND MGMT. DEVELOPMENT																
STATE FOREST RESOURCE PLANNING	PERSON YEARS	1.9	1.5	7.2	1.9	3.2	7.2	2.3	2.3	2.3	2.7	8.9	8.9	2.7	4.7	3.0
FOREST PEST MANAGEMENT																
FPM-SURVEY & TECHNICAL ASSISTANCE (S&PF LANDS)	MIL ACRES	15.0	1.3	27.0	15.0	20.0	27.0	15.0	15.0	21.2	16.2	20.0	24.3	16.0	21.2	21.2
FPM-SURVEYS ON NFS AND OTHER FEDERAL LANDS	MIL ACRES	34.0	31.9	40.0	34.0	36.0	40.0	20.0	20.0	20.0	25.1	40.1	40.2	25.1	28.0	30.0
COOPERATIVE FIRE PROTECTION																
PROTECTION COST PLUS LOSS	$ PER ACRE	.80	.80	.72	.80	.80	.72	.76	.76	.76	.76	.73	.73	.80	.74	.74
COSTS																
OPERATIONAL	MILLION $	1.5	.6	3.2	1.5	2.5	3.2	1.2	1.2	1.2	2.3	1.4	1.8	2.2	1.6	1.1
CAPITAL INVESTMENT	MILLION $	4.4	1.0	5.6	4.4	9.6	11.7	5.3	5.3	5.3	9.0	14.7	14.3	5.4	7.5	7.3
TOTAL-S&PF	MILLION $	5.9	1.6	8.8	5.9	12.1	14.9	6.6	6.6	6.6	11.3	16.1	16.0	7.6	9.1	8.4
ALLOCATED 1/	MILLION $	2.3	.0	2.3	2.3	6.5	6.0	2.3	2.3	2.3	6.4	7.5	7.0	2.8	3.4	3.1
APPROPRIATED	MILLION $	3.6	1.6	6.5	3.6	5.6	8.9	4.3	4.3	4.3	4.9	8.6	9.0	4.7	5.7	5.3

1/ Includes FIP, ACP, and RCFP, all of which are capital investment.

2/ ABBREVIATIONS: THOUS = Thousand, MIL = MILLION, CF = Cubic Feet, IMP = Improvement, RFA = Rural Forestry Assistance, FIP = Forestry Incentives Program, ACP = Agricultural Conservation Program, NFS = National Forest System, RCFP= Rural Community Fire Protection

ALTERNATIVE 3A High Wilderness			ALTERNATIVE 4 All Resources			ALTERNATIVE 5 Reduced			ALTERNATIVE 6 Implement Plans			ALTERNATIVE 7 High PNV			ALTERNATIVE 8 1980 RPA			ALTERNATIVE 9 High Productivity		
1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	96.0	.0	.0	96.0	.0	.0	.0	.0	.0	96.0	.0
53.2	142.0	132.7	53.2	172.9	161.4	70.9	70.9	70.9	53.2	199.4	188.4	53.2	241.0	229.4	53.2	172.9	161.4	53.2	241.0	229.4
10.0	24.3	24.3	10.0	29.3	29.3	14.1	14.1	14.1	10.0	36.7	36.7	10.0	47.7	47.7	10.0	29.3	29.3	10.0	47.7	47.7
3.6	6.7	6.7	3.6	7.7	7.7	4.2	4.2	4.2	3.6	12.8	12.8	3.6	16.2	16.2	3.6	7.7	7.7	3.6	16.2	16.2
72.7	145.5	145.5	72.7	165.8	165.8	85.8	85.8	85.8	72.7	365.0	365.0	72.7	455.0	455.0	72.7	165.8	165.8	72.7	455.0	455.0
18.3	25.0	21.8	20.5	30.5	26.5	11.2	11.2	11.2	32.0	47.9	41.9	36.1	54.0	47.7	20.5	30.5	26.5	36.1	54.0	47.7
14.8	20.9	18.1	16.8	25.1	21.7	9.1	9.1	9.1	16.0	22.0	22.6	18.1	25.8	26.5	16.8	25.1	21.7	18.1	25.8	26.5
9.3	29.2	29.2	9.3	39.7	39.7	15.4	15.4	15.4	9.3	42.6	42.6	9.3	52.8	52.8	9.3	39.7	39.7	9.3	52.8	52.8
2.7	4.7	3.0	2.7	7.4	2.5	1.7	1.7	1.7	2.7	7.2	7.2	2.7	8.9	8.9	2.7	7.4	2.5	2.7	8.9	8.9
16.0	21.2	21.2	18.0	21.2	21.2	10.4	10.4	10.4	15.0	21.2	21.2	16.2	20.0	24.3	18.0	21.2	21.2	16.2	20.0	24.3
25.1	28.0	30.0	25.1	38.9	39.5	15.0	15.0	15.0	25.1	39.0	40.0	25.1	40.1	40.2	25.1	38.9	39.5	25.1	40.1	40.2
.80	.74	.74	.80	.73	.73	.77	.77	.77	.76	.72	.72	.76	.73	.73	.80	.73	.73	.76	.73	.73
2.2	1.6	1.1	2.2	2.1	1.1	.9	.9	.9	2.2	3.2	2.3	2.3	1.4	1.8	2.2	2.1	1.1	2.3	1.4	1.8
5.4	7.5	7.3	5.9	9.5	9.1	4.0	4.0	4.0	8.0	13.3	13.0	9.0	14.7	14.3	5.9	9.5	9.1	9.0	14.7	14.3
7.6	9.1	8.4	8.2	11.6	10.2	4.9	4.9	4.9	10.2	16.4	15.4	11.3	16.1	16.0	8.2	11.6	10.2	11.3	16.1	16.0
2.8	3.4	3.1	3.4	4.1	3.8	1.7	1.7	1.7	5.4	6.5	6.0	6.4	7.5	7.0	3.4	4.1	3.8	6.4	7.5	7.0
4.7	5.7	5.3	4.8	7.5	6.4	3.2	3.2	3.2	4.8	10.0	9.4	4.9	8.6	9.0	4.8	7.5	6.4	4.9	8.6	9.0

TABLE H.16 -- REGION 8 - STATE AND PRIVATE FORESTRY PROGRAM: SUMMARY BY ALTERNATIVE, 1986, 1990, AND 2030

INDICATOR	UNIT OF MEASURE 2/	RECOMMENDED PROGRAM						ALTERNATIVE 1			ALTERNATIVE 2			ALTERNATIVE 3		
		Low Bound			High Bound			Constant			Market			Nonmarket		
		1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
WATER																
IMPROVED WATERSHED CONDITION	THOUS ACRES	1.6	1.3	90.8	1.6	18.1	90.8	2.4	2.4	2.4	2.9	27.5	65.3	2.6	2.7	1.6
TIMBER																
MANAGEMENT PLANS	THOUS ACRES	1180.0	944.0	3242.7	1180.0	2385.9	3242.7	2014.0	2014.0	2014.0	2416.8	4897.0	5823.0	2151.0	2211.0	3529.0
DISPERSED RECREATION	THOUS ACRES	15.4	12.3	67.8	15.4	55.5	67.8	24.8	24.8	24.8	29.8	79.0	84.7	26.5	28.2	50.2
WILDLIFE HABITAT IMP	THOUS ACRES	62.8	50.2	322.0	62.8	186.4	322.0	101.0	101.0	101.0	121.2	296.9	408.9	107.8	122.0	219.8
MAINTAINED WATERSHED CONDITION	THOUS ACRES	69.5	55.6	1278.7	69.5	1111.3	1278.7	107.9	107.9	107.9	129.5	2167.2	2352.7	115.3	622.0	689.3
REFORESTATION (RFA, FIP, ACP)	THOUS ACRES	321.0	256.8	838.9	321.0	708.9	838.9	321.0	321.0	321.0	506.4	984.9	1056.6	474.4	504.6	640.4
TIMBER STAND IMP. (RFA, FIP, ACP)	THOUS ACRES	101.8	81.4	338.5	101.8	245.3	338.5	101.8	101.8	101.8	229.6	587.1	644.9	174.8	241.9	347.6
IMPROVED WOOD UTILIZATION	MIL CF	24.0	19.2	73.5	24.0	65.6	73.5	41.4	41.4	41.4	49.7	75.2	83.8	44.2	46.8	51.0
PROGRAM DEVELOPMENT AND MGMT. DEVELOPMENT																
STATE FOREST RESOURCE PLANNING	PERSON YEARS	17.0	13.6	64.0	17.0	14.0	64.0	24.0	24.0	24.0	28.5	68.0	74.0	25.0	59.0	23.5
FOREST PEST MANAGEMENT																
FPM-SURVEY & TECHNICAL ASSISTANCE (S&PF LANDS)	MIL ACRES	165.2	14.1	178.3	165.2	94.0	178.3	155.0	155.0	155.0	178.0	244.4	307.6	152.5	177.3	184.3
FPM-SURVEYS ON NFS AND OTHER FEDERAL LANDS	MIL ACRES	15.0	14.1	30.1	15.0	26.4	30.1	19.0	19.0	19.0	16.5	23.4	29.2	16.0	17.8	19.2
COOPERATIVE FIRE PROTECTION																
PROTECTION COST PLUS LOSS	$ PER ACRE	1.10	1.10	.94	1.10	1.10	.94	1.09	.75	.75	1.09	.75	.75	1.09	.75	.75
COSTS																
OPERATIONAL	MILLION $	2.8	0.4	1.4	2.8	1.8	1.4	1.3	1.3	1.3	1.9	3.1	2.9	1.6	1.7	1.6
CAPITAL INVESTMENT	MILLION $	20.8	2.6	24.6	20.8	47.7	74.0	28.8	28.8	28.8	52.3	100.2	111.9	43.8	58.7	62.3
TOTAL-S&PF	MILLION $	23.6	3.0	26.0	23.6	49.5	75.4	30.1	30.1	30.1	54.3	103.3	114.9	45.3	60.4	64.0
ALLOCATED 1/	MILLION $	12.2	.0	12.2	12.2	27.3	40.7	12.2	12.2	12.2	32.6	39.6	40.9	26.3	28.4	29.1
APPROPRIATED	MILLION $	11.4	3.0	13.8	11.4	22.2	34.7	17.9	17.9	17.9	21.6	63.7	73.9	19.0	32.0	34.8

1/ Includes FIP, ACP, and RCFP, all of which are capital investment.

2/ ABBREVIATIONS: THOUS = Thousand, MIL = MILLION, CF = Cubic Feet, IMP = Improvement, RFA = Rural Forestry Assistance, FIP = Forestry Incentives Program, ACP = Agricultural Conservation Program, NFS = National Forest System, RCFP= Rural Community Fire Protection

ALTERNATIVE 3A			ALTERNATIVE 4			ALTERNATIVE 5			ALTERNATIVE 6			ALTERNATIVE 7			ALTERNATIVE 8			ALTERNATIVE 9		
High Wilderness			All Resources			Reduced			Implement Plans			High PNV			1980 RPA			High Productivity		
1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
2.6	2.7	1.6	2.6	27.0	65.0	1.8	1.8	1.8	2.7	18.1	90.8	2.7	18.1	90.8	2.6	27.0	65.0	2.7	18.1	90.8
2151.0	2211.0	3529.0	2203.3	2410.0	5049.0	1345.7	1345.7	1345.7	2243.6	2651.0	3603.0	2195.3	2651.0	3603.0	2203.3	2410.0	5049.0	2195.3	2651.0	3603.0
26.5	28.2	50.2	27.1	31.6	75.7	17.6	17.6	17.6	27.6	61.7	67.8	27.0	61.7	67.8	27.1	31.6	75.7	27.0	61.7	67.8
107.8	122.0	219.8	110.4	141.2	328.4	71.6	71.6	71.6	112.5	207.1	322.0	110.0	207.1	322.0	110.4	141.2	328.4	110.0	207.1	322.0
115.3	622.0	689.3	118.1	1134.0	1282.6	79.2	79.2	79.2	120.3	1234.8	1420.7	117.7	1234.8	1420.7	118.1	1134.0	1282.6	117.7	1234.8	1420.7
474.4	504.6	640.4	613.9	680.8	950.8	231.5	231.5	231.5	574.4	758.5	838.9	404.5	758.5	838.9	613.9	680.8	950.8	404.5	758.5	838.9
174.8	241.9	347.6	246.0	383.2	594.9	72.1	72.1	72.1	218.7	261.8	338.5	155.8	261.8	338.5	246.0	383.2	594.9	155.8	261.8	338.5
44.2	46.8	51.0	45.4	53.6	62.0	27.4	27.4	27.4	46.1	65.6	73.5	45.1	54.0	61.0	45.4	53.6	62.0	45.1	54.0	61.0
25.0	59.0	23.5	25.0	96.0	26.0	19.0	19.0	19.0	26.0	51.0	63.0	25.0	68.0	74.0	25.0	96.0	26.0	25.0	68.0	74.0
152.5	177.3	184.3	162.3	200.0	213.9	115.9	115.9	115.9	165.2	213.7	254.7	161.7	200.0	213.9	162.3	200.0	213.9	161.7	200.0	213.9
16.0	17.8	19.2	15.0	18.3	22.5	10.5	10.5	10.5	15.2	19.8	24.4	15.0	19.8	24.4	15.0	18.3	22.5	16.5	23.4	29.2
1.09	.75	.75	.74	.94	.94	1.09	.75	.75	1.09	.94	.94	1.09	.75	.75	.74	.94	.94	1.09	.75	.75
1.6	1.7	1.6	1.8	2.1	1.9	1.0	1.0	1.0	1.8	2.6	2.5	1.7	2.4	2.3	1.8	2.1	1.9	1.8	2.6	2.6
43.8	58.7	62.3	59.6	88.8	98.5	21.5	21.5	21.5	38.6	78.5	125.0	38.2	57.4	80.5	59.6	88.8	98.5	38.5	58.0	81.2
45.3	60.4	64.0	61.4	90.9	100.5	22.4	22.4	22.4	40.4	81.0	127.6	40.0	59.9	82.8	61.4	90.9	100.5	40.3	60.6	83.8
26.3	28.4	29.1	41.8	46.4	48.5	9.4	9.4	9.4	20.5	27.3	40.7	20.4	23.6	40.3	41.8	46.4	48.5	20.4	23.6	40.3
19.0	32.0	34.8	19.6	44.4	51.9	13.0	13.0	13.0	20.0	53.7	86.9	19.6	36.3	42.4	19.6	44.4	51.9	20.0	37.0	43.5

TABLE H.17 -- NORTHEASTERN AREA - STATE AND PRIVATE FORESTRY PROGRAM: SUMMARY BY ALTERNATIVE, 1986, 1990, AND 2030

INDICATOR	UNIT OF MEASURE 2/	RECOMMENDED PROGRAM						ALTERNATIVE 1			ALTERNATIVE 2			ALTERNATIVE 3		
		Low Bound			High Bound			Constant			Market			Nonmarket		
		1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
WATER																
IMPROVED WATERSHED CONDITION	THOUS ACRES	.0	.0	70.0	.0	2.9	70.0	9.6	9.6	9.6	15.6	70.8	83.7	70.0	70.0	70.0
TIMBER																
MANAGEMENT PLANS	THOUS ACRES	778.2	622.6	2597.9	778.2	1280.0	2597.9	1138.6	1138.6	1138.6	1729.6	3868.8	4313.4	753.0	1080.0	1520.0
DISPERSED RECREATION	THOUS ACRES	34.2	27.4	255.8	34.2	58.4	255.8	50.0	50.0	50.0	295.3	614.6	650.2	40.1	62.5	98.0
WILDLIFE HABITAT IMP	THOUS ACRES	70.3	56.2	190.4	70.3	106.7	190.4	103.0	103.0	103.0	130.8	275.7	306.3	200.4	433.1	450.0
MAINTAINED WATERSHED CONDITION	THOUS ACRES	182.2	145.8	2113.4	182.2	585.0	2113.4	500.0	500.0	500.0	1005.5	2295.7	2634.4	713.3	900.0	900.0
REFORESTATION (RFA, FIP, ACP)	THOUS ACRES	55.2	44.2	136.2	55.2	92.4	136.2	55.2	55.2	55.2	150.6	174.9	191.7	72.7	71.9	78.5
TIMBER STAND IMP. (RFA, FIP, ACP)	THOUS ACRES	66.6	53.3	216.4	66.6	143.4	216.4	66.6	66.6	66.6	250.1	297.0	326.5	158.6	187.5	300.0
IMPROVED WOOD UTILIZATION	MIL CF	34.3	27.4	92.5	34.3	53.8	92.5	50.3	50.3	50.3	50.4	109.9	120.3	50.3	63.4	97.0
PROGRAM DEVELOPMENT AND MGMT. DEVELOPMENT																
STATE FOREST RESOURCE PLANNING	PERSON YEARS	19.8	15.8	26.0	19.8	15.2	26.0	29.0	29.0	29.0	39.9	51.9	50.4	30.0	61.0	26.0
FOREST PEST MANAGEMENT																
FPM-SURVEY & TECHNICAL ASSISTANCE (S&PF LANDS)	MIL ACRES	200.4	17.1	190.0	200.4	182.0	190.0	162.0	162.0	162.0	210.6	210.0	210.0	173.0	173.0	185.0
FPM-SURVEYS ON NFS AND OTHER FEDERAL LANDS	MIL ACRES	6.0	5.6	15.0	6.0	11.0	15.0	2.0	2.0	2.0	4.1	7.0	7.0	5.0	5.0	5.0
COOPERATIVE FIRE PROTECTION																
PROTECTION COST PLUS LOSS	$ PER ACRE	0.52	0.52	0.46	0.52	0.52	0.46	.52	.52	.52	.46	.46	.46	.46	.46	.46
COSTS																
OPERATIONAL	MILLION $	4.3	1.0	3.4	4.3	3.1	4.1	4.4	4.4	4.4	5.5	15.1	18.4	3.9	4.0	5.5
CAPITAL INVESTMENT	MILLION $	15.7	4.6	18.6	15.7	25.3	42.2	22.5	22.5	22.5	33.4	55.8	62.7	28.2	39.9	46.2
TOTAL-S&PF	MILLION $	20.0	6.5	22.0	20.0	28.4	46.3	26.9	26.9	26.9	39.0	70.8	81.1	32.1	43.9	51.7
ALLOCATED 1/	MILLION $	5.6	.0	5.6	5.6	8.7	11.6	5.6	5.6	5.6	13.1	15.8	17.5	9.9	11.0	15.2
APPROPRIATED	MILLION $	14.4	6.5	16.4	14.4	19.7	34.7	21.4	21.4	21.4	25.8	55.1	63.6	22.2	32.9	36.5

1/ Includes FIP, ACP, and RCFP, all of which are capital investment.

2/ ABBREVIATIONS: THOUS = Thousand, MIL = MILLION, CF = Cubic Feet, IMP = Improvement, RFA = Rural Forestry Assistance, FIP = Forestry Incentives Program, ACP = Agricultural Conservation Program, NFS = National Forest System, RCFP= Rural Community Fire Protection

ALTERNATIVE 3A			ALTERNATIVE 4			ALTERNATIVE 5			ALTERNATIVE 6			ALTERNATIVE 7			ALTERNATIVE 8			ALTERNATIVE 9		
High Wilderness			All Resources			Reduced			Implement Plans			High PNV			1980 RPA			High Productivity		
1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
70.0	70.0	70.0	52.3	93.6	106.6	2.4	2.4	2.4	15.4	93.6	106.5	42.3	70.8	83.7	52.3	93.6	106.6	42.3	70.8	83.7
753.0	1080.0	1520.0	676.4	1472.8	1660.0	853.9	853.9	853.9	1138.6	2278.9	2597.9	1645.1	3868.8	4313.4	676.4	1472.8	1660.0	1645.1	3868.8	4313.4
40.1	62.5	98.0	35.9	137.8	322.2	37.5	37.5	37.5	119.6	230.3	255.8	280.9	614.6	650.2	35.9	137.8	322.2	280.9	614.6	650.2
200.4	433.1	450.0	179.5	1009.3	1241.0	77.2	77.2	77.2	91.2	172.6	190.4	124.4	275.7	306.3	179.5	1009.3	1241.0	124.4	275.7	306.3
713.3	900.0	900.0	1151.6	1855.0	2115.0	200.0	200.0	200.0	901.7	1853.9	2113.4	956.4	2295.7	2634.4	1151.6	1855.0	2115.0	956.4	2295.7	2634.4
72.7	71.9	78.5	73.1	80.0	91.1	41.4	41.4	41.4	105.3	123.1	136.2	150.6	174.9	191.7	73.1	80.0	91.1	150.6	174.9	191.7
158.6	187.5	300.0	158.9	213.8	349.1	49.9	49.9	49.9	163.4	191.6	216.4	250.1	297.0	326.5	158.9	213.8	349.1	250.1	297.0	326.5
50.3	63.4	97.0	50.3	88.1	110.0	37.7	37.7	37.7	51.7	77.0	92.5	53.1	109.9	120.3	50.3	88.1	110.0	53.1	109.9	120.3
30.0	61.0	26.0	34.1	91.0	25.0	21.7	21.7	21.7	37.8	50.9	50.3	38.1	51.0	50.0	34.1	91.0	25.0	38.1	51.0	50.0
173.0	173.0	185.0	182.0	185.0	190.0	87.0	87.0	87.0	200.4	240.0	240.0	183.0	183.6	183.6	182.0	185.0	190.0	183.0	183.6	183.6
5.0	5.0	5.0	6.0	6.0	8.0	2.0	2.0	2.0	6.0	8.0	9.0	6.3	6.0	6.0	6.0	6.0	7.0	6.3	7.0	8.0
.46	.46	.46	.46	.50	.50	.63	.63	.63	.46	.46	.46	.46	.46	.46	.46	.50	.50	.46	.46	.46
3.9	4.0	5.5	4.3	4.9	5.7	3.5	3.5	3.5	5.6	14.7	15.6	4.7	6.6	6.7	4.3	4.9	5.7	4.7	6.6	6.7
28.2	39.9	46.2	30.0	55.1	59.5	16.6	16.6	16.6	28.8	44.1	52.9	32.4	53.2	59.8	30.0	55.1	59.5	32.5	53.4	60.1
32.1	43.9	51.7	34.2	60.0	65.2	20.0	20.0	20.0	34.5	58.8	68.5	37.1	59.8	66.5	34.2	60.0	65.2	37.2	60.0	66.8
9.9	11.0	15.2	11.0	14.0	17.5	4.2	4.2	4.2	9.7	10.8	11.9	12.3	14.0	15.6	11.0	14.0	17.5	12.3	14.0	15.6
22.2	32.9	36.5	23.2	46.0	47.7	15.8	15.8	15.8	24.8	48.0	56.6	24.8	45.8	51.0	23.2	46.0	47.7	24.9	46.0	51.2

TABLE H.18 -- REGION 10 - STATE AND PRIVATE FORESTRY PROGRAM: SUMMARY BY ALTERNATIVE, 1986, 1990, AND 2030

INDICATOR	UNIT OF MEASURE 2/	RECOMMENDED PROGRAM						ALTERNATIVE 1			ALTERNATIVE 2			ALTERNATIVE 3		
		Low Bound			High Bound			Constant			Market			Nonmarket		
		1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
WATER																
IMPROVED WATERSHED CONDITION	THOUS ACRES	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TIMBER																
MANAGEMENT PLANS	THOUS ACRES	1.2	1.0	12.5	1.2	1.1	12.5	10.0	10.0	11.0	15.0	25.0	30.0	12.0	12.4	12.5
DISPERSED RECREATION	THOUS ACRES	.0	.0	.0	.0	.0	.0	.1	.1	.1	.1	.1	.1	.3	.3	.3
WILDLIFE HABITAT IMP	THOUS ACRES	.1	.1	1.2	.1	.1	1.2	.7	.7	.7	.7	.7	.7	1.5	1.5	1.8
MAINTAINED WATERSHED CONDITION	THOUS ACRES	.0	.0	18.0	.0	.0	18.0	.2	.2	.6	1.5	3.0	3.7	3.0	3.0	3.2
REFORESTATION (RFA, FIP, ACP)	THOUS ACRES	.2	.2	2.0	.2	.9	2.0	.3	.3	.3	1.5	3.0	6.0	1.6	1.6	3.9
TIMBER STAND IMP. (RFA, FIP, ACP)	THOUS ACRES	.3	.2	4.1	.3	2.1	4.1	.2	.2	.2	1.5	3.0	6.0	.8	.8	1.1
IMPROVED WOOD UTILIZATION	MIL CF	.5	.4	1.5	.5	.5	1.5	.8	.8	.8	1.3	1.8	3.0	1.1	1.3	1.9
PROGRAM DEVELOPMENT AND MGMT. DEVELOPMENT																
STATE FOREST RESOURCE PLANNING	PERSON YEARS	1.5	1.2	4.0	1.5	1.5	4.0	5.0	5.0	4.2	4.0	4.0	4.0	4.0	4.0	4.0
FOREST PEST MANAGEMENT																
FPM-SURVEY & TECHNICAL ASSISTANCE (S&PF LANDS)	MIL ACRES	10.0	.9	15.0	10.0	13.0	15.0	4.0	4.0	4.0	4.0	10.0	10.0	2.0	47.0	50.0
FPM-SURVEYS ON NFS AND OTHER FEDERAL LANDS	MIL ACRES	20.0	18.8	20.0	20.0	20.0	20.0	22.0	22.0	22.0	20.0	30.0	30.0	21.0	21.0	21.0
COOPERATIVE FIRE PROTECTION																
PROTECTION COST PLUS LOSS	$ PER ACRE	.46	.42	.21	.46	.31	.21	.27	.27	.27	.27	.21	.20	.27	.25	.25
COSTS																
OPERATIONAL	MILLION $	.0	.0	.1	.0	.1	.1	0	0	0	0	.2	.2	0	.6	.6
CAPITAL INVESTMENT	MILLION $	.9	.5	1.5	.9	1.8	4.4	1.7	1.7	1.7	3.0	5.3	6.6	2.4	5.8	6.6
TOTAL-S&PF	MILLION $	.9	.5	1.6	.9	1.9	4.5	1.7	1.7	1.7	3.0	5.5	6.8	2.4	6.3	7.1
ALLOCATED 1/	MILLION $	.1	.0	.1	.1	.5	.8	.1	.1	.1	.6	1.2	2.1	.5	.5	.9
APPROPRIATED	MILLION $	.8	.5	1.5	.8	1.4	3.7	1.7	1.7	1.6	2.5	4.4	4.7	1.9	5.8	6.3

1/ Includes FIP, ACP, and RCFP, all of which are capital investment.

2/ ABBREVIATIONS: THOUS = Thousand, MIL = MILLION, CF = Cubic Feet, IMP = Improvement, RFA = Rural Forestry Assistance, FIP = Forestry Incentives Program, ACP = Agricultural Conservation Program, NFS = National Forest System, RCFP= Rural Community Fire Protection

ALTERNATIVE 3A			ALTERNATIVE 4			ALTERNATIVE 5			ALTERNATIVE 6			ALTERNATIVE 7			ALTERNATIVE 8			ALTERNATIVE 9		
High Wilderness			All Resources			Reduced			Implement Plans			High PNV			1980 RPA			High Productivity		
1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12.0	12.4	12.5	13.9	13.9	13.9	8.0	8.0	8.0	15.0	25.0	30.0	15.0	25.0	30.0	13.9	13.9	13.9	15.0	25.0	30.0
.3	.3	.3	.5	.5	.5	.1	.1	.1	.1	.1	.1	.1	.1	.1	.5	.5	.5	.1	.1	.1
1.5	1.5	1.8	2.3	2.3	3.0	.4	.4	.4	.7	.7	.7	.7	.7	.7	2.3	2.3	3.0	.7	.7	.7
3.0	3.0	3.2	5.7	5.7	5.7	1.5	1.5	1.5	1.5	3.0	3.7	1.5	3.0	3.7	5.7	5.7	5.7	1.5	3.0	3.7
1.6	1.6	3.9	2.9	2.9	7.4	.2	.2	.2	.8	.9	2.0	.8	.9	2.0	2.9	2.9	7.4	.8	.9	2.0
.8	.8	1.1	1.3	1.3	1.9	.1	.1	.1	1.1	2.1	4.1	1.1	2.1	4.1	1.3	1.3	1.9	1.1	2.1	4.1
1.1	1.3	1.9	1.3	1.8	3.0	.8	1.0	1.3	1.0	1.3	2.0	1.0	1.3	2.0	1.3	1.8	3.0	1.0	1.3	2.0
4.0	4.0	4.0	5.0	4.0	4.0	4.0	4.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	4.0	4.0	5.0	5.0	5.0
2.0	47.0	50.0	12.0	66.0	75.0	4.0	4.0	4.0	10.0	18.0	18.0	10.0	18.0	18.0	12.0	66.0	75.0	10.0	18.0	18.0
21.0	21.0	21.0	21.0	20.0	20.0	16.0	16.0	16.0	20.0	20.0	20.0	20.0	20.0	20.0	21.0	20.0	20.0	20.0	20.0	20.0
.27	.25	.25	.27	.25	.25	.29	.29	.29	.27	.21	.21	.27	.21	.21	.27	.25	.25	.27	.21	.21
0	.6	.6	0	1.1	1.2	0	0	0	0	.2	.2	0	.2	.2	0	1.1	1.2	0	.2	.2
2.4	5.8	6.6	2.8	9.8	11.5	1.3	1.3	1.3	2.8	4.0	5.0	2.8	4.0	4.5	2.8	9.8	11.5	2.8	4.0	4.5
2.4	6.3	7.1	2.9	10.9	12.6	1.3	1.3	1.3	2.8	4.2	5.2	2.8	4.2	4.6	2.9	10.9	12.6	2.8	4.2	4.7
.5	.5	.9	.9	.9	1.7	0	0	0	.4	.5	.9	.4	.5	.9	.9	.9	1.7	.4	.5	.9
1.9	5.8	6.3	2.0	10.0	10.9	1.2	1.2	1.2	2.4	3.7	4.3	2.4	3.7	3.7	2.0	10.0	10.9	2.4	3.7	3.8

TABLE H.19--NORTHEAST STATION RESEARCH PROGRAM: SUMMARY BY ALTERNATIVE, 1986, 1990, and 2030 1/

INDICATOR	RECOMMENDED PROGRAM						ALTERNATIVE 1			ALTERNATIVE 2			ALTERNATIVE 3		
	Low Bound			High Bound			Constant			Market			Nonmarket		
	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
	(MILLIONS OF DOLLARS)														
WATER	.7	1.2	1.1	.7	1.2	1.2	.9	1.0	1.0	.9	1.3	1.5	.8	1.0	1.7
WATERSHED	.6	1.0	.9	.6	1.0	1.0	.8	.9	.8	.8	1.1	1.2	.7	.8	1.4
SOILS	.1	.2	.2	.1	.2	.2	.1	.1	.2	.1	.2	.3	.1	.2	.3
MINERALS	1.4	1.2	1.3	1.4	1.2	1.6	1.3	1.4	1.8	1.4	1.9	2.2	1.5	1.5	2.4
RANGE	0	0	.1	0	0	.1	0	0	.3	0	0	.1	.1	.1	.3
RECREATION	.7	.6	1.2	.7	1.0	1.5	.9	1.0	1.2	.8	1.2	1.3	1.4	1.9	2.3
FOREST RECREATION	.2	.1	.3	.2	.3	.5	.3	.3	.6	.3	.6	.6	.6	.9	.8
URBAN FORESTS	.5	.5	.8	.5	.7	1.0	.6	.7	.6	.5	.6	.7	.8	1.0	1.5
WILDERNESS	.1	.1	.1	.1	.1	.1	0	0	.2	0	0	0	.1	.1	0
TIMBER	7.0	6.4	9.5	7.0	7.7	11.6	8.0	8.0	6.8	8.6	12.5	16.8	7.5	8.6	13.2
INVENTORY	1.6	1.6	1.8	1.6	1.6	2.2	1.6	1.6	1.3	1.9	3.0	4.8	1.4	1.5	3.6
EVALUATION	.1	.1	.3	.1	.1	.3	0	.1	.1	.1	.2	.4	0	0	.1
BIOLOGY	2.4	2.1	3.6	2.4	2.6	4.2	2.8	2.7	2.5	2.8	4.2	7.0	2.8	3.1	5.2
GENETICS	.1	.1	.4	.1	.1	.5	.1	.1	.2	.2	.5	1.0	.1	.2	.5
PRODUCTION ECONOMICS	.6	.5	.7	.6	.7	1.0	.6	.7	.4	.7	.9	.8	.5	.8	.9
HARVESTING	.4	.4	.5	.4	.5	.7	.5	.5	.5	.6	.8	.4	.6	.7	.6
PROCESSING	1.1	1.0	1.3	1.1	1.3	1.7	1.4	1.3	1.0	1.4	1.8	1.6	1.3	1.3	1.4
MARKETING ECONOMICS	.7	.6	.9	.7	.8	1.0	1.0	1.0	.8	.9	1.1	.8	.8	1.0	.9
WILDLIFE-FISH	.4	.3	.6	.4	.5	.7	.3	.5	.8	.3	.5	1.1	.5	.8	1.3
PROTECTION	3.6	3.5	4.1	3.6	3.6	4.9	5.0	4.4	3.8	4.7	6.1	6.4	5.1	5.5	7.6
INSECTS	2.3	2.2	2.4	2.3	2.2	3.1	3.6	2.9	2.5	3.2	4.1	4.1	3.7	3.9	5.3
DISEASE	1.3	1.3	1.7	1.3	1.4	1.8	1.4	1.5	1.3	1.5	2.0	2.3	1.4	1.6	2.3
FIRE							0	0	0	0	0	0	0	0	0
PROGRAM TOTAL	13.9	13.3	18.1	13.9	15.3	21.7	16.5	16.3	15.7	16.7	23.5	29.7	17.0	19.4	29.1
CONSTRUCTION	.1	0	.5	.1	.3	.8	.4	.4	.4	.5	1.0	2.1	.5	.7	2.1
TOTAL RESEARCH	15.8	15.3	21.0	15.7	17.7	25.4	19.3	19.0	18.4	19.6	27.5	35.3	19.9	22.7	34.8

* Less than $50,000.

1/Totals include some Administrative Costs not shown in the body of the table.

ALTERNATIVE 3A High Wilderness			ALTERNATIVE 4 All Resources			ALTERNATIVE 5 Reduced			ALTERNATIVE 6 Implement Plans			ALTERNATIVE 7 High PNV			ALTERNATIVE 8 1980 RPA			ALTERNATIVE 9 High Productivity		
1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
(MILLIONS OF DOLLARS)																				
.8	**1.0**	**1.7**	**.7**	**1.1**	**2.0**	**.7**	**.5**	**.5**	**.7**	**1.4**	**2.7**	**.8**	**1.4**	**2.4**	**.7**	**1.4**	**2.7**	**1.0**	**1.8**	**2.2**
.7	.8	1.4	.6	1.0	1.8	.6	.5	.5	.6	1.3	2.5	.7	1.3	1.9	.6	1.3	2.5	.9	1.6	1.7
.1	.2	.3	.1	.1	.2	.1	0	0	.1	.1	.2	.1	.1	.5	.1	.1	.2	.1	.2	.5
1.5	**1.5**	**2.4**	**1.4**	**1.6**	**2.4**	**1.0**	**1.1**	**1.1**	**1.5**	**2.0**	**3.2**	**1.3**	**1.5**	**5.2**	**1.5**	**2.0**	**3.2**	**1.4**	**1.4**	**1.8**
.1	**.1**	**.3**	**0**	**.1**	**.2**	**0**	**0**	**0**	**0**	**.1**	**.3**	**0**	**0**	**0**	**0**	**.1**	**.3**	**0**	**0**	**0**
1.4	**1.9**	**2.3**	**1.2**	**1.5**	**1.7**	**.7**	**.8**	**.8**	**1.3**	**1.7**	**1.9**	**.9**	**1.3**	**2.4**	**1.3**	**1.7**	**1.9**	**.9**	**.9**	**1.0**
.6	.9	.8	.4	.5	.7	.3	.3	.3	.4	.6	.7	.3	.4	.9	.4	.6	.7	.3	.3	.5
.8	1.0	1.5	.8	1.0	1.0	.4	.5	.5	.9	1.1	1.2	.6	.9	1.5	.9	1.1	1.2	.6	.6	.5
.1	**.1**	**0**	**.1**	**.1**	**.2**	**0**	**0**	**0**	**.1**	**0**	**.2**	**0**	**0**	**0**	**.1**	**0**	**.2**	**0**	**0**	**0**
7.5	**8.6**	**13.2**	**9.2**	**11.0**	**14.6**	**6.0**	**6.1**	**6.2**	**10.2**	**13.1**	**17.3**	**8.5**	**12.1**	**16.0**	**10.2**	**13.1**	**17.3**	**10.4**	**11.6**	**12.8**
1.4	1.5	3.6	1.8	2.2	3.7	1.1	1.1	1.1	2.0	2.9	4.5	1.7	2.8	3.5	2.0	2.9	4.5	1.9	1.8	1.5
0	0	.1	.1	.2	.5	0	0	0	.3	.2	.5	.1	.2	.6	.3	.2	.5	0	.1	.1
2.8	3.1	5.2	3.3	3.9	5.4	2.1	2.0	2.2	3.6	4.9	6.6	2.7	4.4	6.0	3.6	4.9	6.6	3.8	4.3	6.0
.1	.2	.5	.5	.7	1.5	0	.2	.2	.5	.8	1.9	.3	.5	.9	.5	.8	1.9	.4	.6	1.2
.5	.8	.9	.7	1.0	1.0	.5	.5	.5	.6	.9	.9	.8	1.1	1.2	.6	.9	.9	.7	.7	.4
.6	.7	.6	.6	.6	.2	.4	.4	.4	.7	.7	.3	.7	.8	.7	.7	.7	.3	.8	1.2	.9
1.3	1.3	1.4	1.4	1.5	1.4	1.1	1.1	1.1	1.7	1.7	1.8	1.5	1.7	2.3	1.7	1.7	1.8	1.8	1.9	1.9
.8	1.0	.9	.8	.9	.9	.8	.8	.9	.8	1.0	.8	.7	.6	.8	.8	1.0	.8	1.0	1.0	.8
.5	**.8**	**1.3**	**.5**	**.6**	**.9**	**.3**	**.3**	**.3**	**.5**	**.7**	**1.1**	**.3**	**.5**	**.8**	**.5**	**.7**	**1.1**	**.4**	**.6**	**1.2**
5.1	**5.5**	**7.6**	**3.8**	**4.7**	**6.7**	**3.6**	**4.8**	**3.8**	**4.0**	**6.6**	**8.7**	**4.0**	**6.1**	**6.5**	**4.0**	**6.6**	**8.7**	**5.9**	**6.0**	**6.5**
3.7	3.9	5.3	2.4	3.0	4.9	2.5	2.7	2.7	2.5	4.0	6.4	2.8	4.4	4.5	2.5	4.0	6.4	3.9	4.1	3.9
1.4	1.6	2.3	1.4	1.7	1.8	1.1	1.1	1.1	1.5	2.6	2.3	1.2	1.7	2.0	1.5	2.6	2.3	2.0	1.9	2.6
17.0	**19.4**	**29.1**	**16.7**	**20.5**	**28.8**	**12.5**	**12.7**	**12.9**	**18.3**	**25.5**	**35.5**	**15.7**	**22.8**	**33.4**	**18.3**	**25.5**	**35.5**	**19.9**	**22.3**	**25.7**
.5	**.7**	**2.1**	**.5**	**.8**	**2.2**	**.1**	**.1**	**.1**	**.6**	**1.2**	**2.6**	**.5**	**1.0**	**2.2**	**.6**	**1.2**	**2.6**	**.5**	**.8**	**1.0**
19.9	**22.7**	**34.8**	**19.7**	**24.1**	**34.5**	**14.4**	**14.6**	**14.7**	**21.6**	**29.9**	**42.1**	**18.4**	**26.8**	**39.4**	**21.6**	**29.9**	**42.1**	**22.8**	**25.9**	**29.6**

TABLE H.20--SOUTHEASTERN STATION RESEARCH PROGRAM: SUMMARY BY ALTERNATIVE, 1986, 1990, and 2030 1/

INDICATOR	RECOMMENDED PROGRAM						ALTERNATIVE 1			ALTERNATIVE 2			ALTERNATIVE 3		
	Low Bound			High Bound			Constant			Market			Nonmarket		
	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
	(MILLIONS OF DOLLARS)														
WATER	0.2	0.3	0.4	0.2	0.3	0.4	.3	.3	.4	.3	.4	.5	.2	.2	.3
WATERSHED	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOILS	0.2	0.3	0.4	0.2	0.3	0.4	.3	.3	.4	.3	.4	.5	.2	.2	.3
MINERALS	0.7	0.6	0.8	0.7	0.6	1.0	.6	.6	.7	.8	1.1	1.5	.7	.8	1.1
RANGE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RECREATION	0.1	0.1	0.1	0.1	0.2	0.2	.1	.1	.1	.1	.1	.3	.6	.5	1.1
FOREST RECREATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
URBAN FORESTS	0.1	0.1	0.2	0.1	0.2	0.2	.1	.1	.1	.1	.1	.3	.6	.5	1.1
WILDERNESS	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	0	0	.1	.1	.2	.3
TIMBER	5.4	5.3	7.3	5.4	6.2	9.0	6.4	6.2	6.4	6.5	9.4	11.8	5.7	6.2	9.5
INVENTORY	1.6	1.5	1.6	1.6	1.5	2.0	1.3	1.3	1.4	1.5	2.1	2.5	1.3	1.5	2.2
EVALUATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BIOLOGY	1.9	1.7	2.7	1.9	2.1	3.2	2.3	2.3	2.4	2.3	3.3	4.2	2.2	2.3	3.7
GENETICS	0.6	0.8	1.0	0.6	.9	1.2	1.1	1.0	1.0	.9	1.4	1.6	1.0	1.0	1.5
PRODUCTION ECONOMICS	0.2	0.2	0.3	0.2	0.3	0.5	.4	.3	.3	.3	.5	.7	.1	.1	.1
HARVESTING	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PROCESSING	1.1	1.1	1.7	1.1	1.4	2.1	1.3	1.3	1.3	1.5	2.1	2.8	1.1	1.3	2.0
MARKETING ECONOMICS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WILDLIFE-FISH	0.2	0.2	0.4	0.2	0.2	0.4	.3	.3	.3	.3	.5	.7	1.1	1.3	1.7
PROTECTION	3.2	3.5	4.2	3.2	3.6	4.9	3.0	3.1	3.1	3.6	5.2	5.5	3.8	4.7	7.9
INSECTS	1.4	1.4	1.6	1.4	1.4	2.0	1.2	1.3	1.2	1.5	2.1	2.7	1.4	1.7	2.7
DISEASE	1.1	1.3	1.7	1.1	1.4	1.8	1.2	1.2	1.2	1.4	2.0	2.5	1.5	1.9	3.1
FIRE	0.7	0.8	0.9	0.7	0.8	1.1	.6	.6	.7	.7	1.1	1.4	.9	1.1	2.1
PROGRAM TOTAL	9.9	10.0	13.3	9.9	11.3	16.0	10.8	10.8	11.0	11.6	16.6	21.4	12.2	13.7	22.0
CONSTRUCTION	0.0	0.0	0.4	0.0	0.2	0.6	.2	.2	.2	.3	.7	1.4	.3	.5	1.4
TOTAL RESEARCH	11.1	11.3	15.2	11.1	12.8	18.4	12.6	12.6	12.8	13.6	19.3	25.3	14.2	16.0	25.8

* Less than $50,000.

1/ Totals include some Administrative Costs not shown in the body of the table.

ALTERNATIVE 3A High Wilderness			ALTERNATIVE 4 All Resources			ALTERNATIVE 5 Reduced			ALTERNATIVE 6 Implement Plans			ALTERNATIVE 7 High PNV			ALTERNATIVE 8 1980 RPA			ALTERNATIVE 9 High Productivity		
1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
(MILLIONS OF DOLLARS)																				
.2	**.2**	**.3**	**.2**	**.3**	**.4**	**.3**	**.1**	**.1**	**.3**	**.4**	**.5**	**.2**	**.4**	**.3**	**.3**	**.4**	**.5**	**.4**	**.4**	**.5**
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.2	.2	.3	.2	.3	.4	.3	.1	.1	.3	.4	.5	.2	.4	.3	.3	.4	.5	.4	.4	.5
.7	**.8**	**1.1**	**.7**	**.8**	**1.2**	**.6**	**.6**	**.6**	**.8**	**1.0**	**1.4**	**.8**	**1.2**	**1.6**	**.8**	**1.0**	**1.4**	**1.0**	**1.0**	**1.3**
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
.6	**.5**	**1.1**	**0**	**0**	**0**	**.1**	**.1**	**.1**	**.2**	**.2**	**.3**	**.1**	**.1**	**.2**	**.2**	**.2**	**.3**	**.1**	**.1**	**.2**
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.6	.5	1.1	.2	.2	.3	.1	.1	.1	.2	.2	.3	.1	.1	.2	.2	.2	.3	.1	.1	.2
.1	**.2**	**.3**	**.1**	**0**	**.1**	**0**	**0**	**0**	**.1**	**.1**	**.1**	**.1**	**0**	**.1**	**.1**	**.1**	**.1**	**.1**	**0**	**.1**
5.7	**6.2**	**9.5**	**6.7**	**8.5**	**12.8**	**4.1**	**4.2**	**4.2**	**7.6**	**10.8**	**15.7**	**5.9**	**9.2**	**10.3**	**7.6**	**10.8**	**15.7**	**7.4**	**8.9**	**10.5**
1.3	1.5	2.2	1.5	1.9	2.9	1.1	1.1	1.1	1.7	2.5	3.6	1.5	2.3	3.5	1.7	2.5	3.6	1.7	2.0	2.2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.2	2.3	3.7	2.4	3.1	4.6	1.1	1.2	1.2	2.7	3.9	5.6	1.7	3.0	4.6	2.7	3.9	5.6	2.6	3.1	3.7
1.0	1.0	1.5	1.0	1.1	1.6	.6	.6	.6	1.1	1.4	2.0	.9	1.3	1.8	1.1	1.4	2.0	1.1	1.4	1.6
.1	.1	.1	.3	.4	.7	.3	.3	.3	.4	.5	.8	.4	.4	.4	.4	.5	.8	.4	.5	.6
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.1	1.3	2.0	1.5	2.0	3.0	1.0	1.0	1.0	1.7	2.5	3.7	1.4	2.2	.0	1.7	2.5	3.7	1.6	1.9	2.4
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.1	**1.3**	**1.7**	**.3**	**.3**	**.5**	**.2**	**.2**	**.2**	**.3**	**.4**	**.6**	**.3**	**.3**	**.3**	**.3**	**.4**	**.6**	**.3**	**.3**	**.6**
3.8	**4.7**	**7.9**	**3.6**	**4.5**	**6.8**	**2.2**	**2.2**	**2.2**	**3.9**	**5.8**	**8.8**	**4.5**	**6.8**	**11.0**	**3.9**	**5.8**	**8.8**	**4.3**	**5.1**	**6.1**
1.4	1.7	2.7	1.5	1.7	2.5	.9	.9	.9	1.6	2.4	3.3	1.9	2.7	6.8	1.6	2.4	3.3	1.7	2.1	2.5
1.5	1.9	3.1	1.3	1.8	2.8	.9	.9	.9	1.5	2.2	3.6	1.6	2.6	2.6	1.5	2.2	3.6	1.7	1.9	2.3
.9	1.1	2.1	.8	1.0	1.5	.5	.5	.5	.8	1.2	1.9	1.0	1.5	1.6	.8	1.2	1.9	.9	1.1	1.3
12.2	**13.7**	**22.0**	**11.8**	**14.8**	**22.1**	**7.7**	**7.6**	**7.6**	**13.1**	**18.9**	**27.4**	**11.9**	**17.8**	**23.6**	**13.1**	**18.9**	**27.4**	**13.5**	**15.9**	**19.2**
.3	**.5**	**1.4**	**.3**	**.5**	**1.5**	**.1**	**.1**	**.1**	**.4**	**.8**	**1.7**	**.3**	**.7**	**1.7**	**.4**	**.8**	**1.7**	**.3**	**.6**	**.8**
14.2	**16.0**	**25.8**	**13.8**	**17.3**	**25.9**	**9.0**	**8.8**	**8.8**	**15.3**	**21.8**	**31.9**	**14.0**	**20.8**	**28.7**	**15.3**	**21.8**	**31.9**	**15.5**	**18.4**	**22.3**

TABLE H.21--SOUTHERN STATION RESEARCH PROGRAM: SUMMARY BY ALTERNATIVE, 1986, 1990, and 2030 1/

INDICATOR	RECOMMENDED PROGRAM						ALTERNATIVE 1			ALTERNATIVE 2			ALTERNATIVE 3		
	Low Bound			High Bound			Constant			Market			Nonmarket		
	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
	(MILLIONS OF DOLLARS)														
WATER	**0.8**	**1.0**	**0.8**	**0.8**	**1.0**	**0.9**	**.5**	**.6**	**.5**	**.7**	**.8**	**1.0**	**1.6**	**1.8**	**3.1**
WATERSHED	0.5	0.6	0.8	0.5	0.6	0.9	.5	.6	.5	.7	.8	1.0	1.6	1.8	3.1
SOILS	0.3	0.4	0	0.3	0.4	0	0	0	0	0	0	0	0	0	0
MINERALS	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
RANGE	**0.2**	**0.2**	**0.4**	**0.2**	**0.3**	**0.4**	**.4**	**.4**	**.4**	**.7**	**.8**	**.9**	**.7**	**.8**	**1.3**
RECREATION	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
FOREST RECREATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
URBAN FORESTS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WILDERNESS	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
TIMBER	**8.1**	**7.5**	**10.2**	**8.1**	**8.9**	**12.5**	**8.5**	**8.5**	**8.5**	**10.8**	**12.5**	**15.6**	**8.7**	**9.9**	**15.9**
INVENTORY	1.8	1.7	2.0	1.8	1.7	2.5	1.6	1.6	1.6	1.8	2.0	2.4	1.5	1.7	2.6
EVALUATION	0.4	0.3	0.2	0.4	0.3	0.2	.1	.1	.1	.2	.1	.2	.2	.2	.3
BIOLOGY	4.1	3.4	4.8	4.1	4.3	5.7	4.1	4.1	4.2	4.9	6.0	7.6	4.8	5.4	8.8
GENETICS	0.4	0.6	0.8	0.4	0.7	1.0	.8	.8	.8	1.0	1.1	1.3	.5	.6	.9
PRODUCTION ECONOMICS	0.2	0.3	0.4	0.2	0.4	0.6	.4	.4	.4	.5	.6	.8	.5	.5	.8
HARVESTING	0.3	0.3	0.6	0.3	0.4	0.8	.4	.4	.4	.7	.8	.9	.4	.5	1.0
PROCESSING	0.8	0.7	1.3	0.8	[illegible]	1.6	1.1	1.1	1.0	1.6	1.8	2.3	.8	1.0	1.5
MARKETING ECONOMICS	0.1	0.2	0.1	0.1	0.[illegible]	0.1	0	0	0	.1	.1	.1	0	0	0
WILDLIFE-FISH	**0.4**	**0.5**	**0.6**	**0.4**	**0.7**	**0.7**	**.5**	**.5**	**.4**	**.5**	**.6**	**.8**	**1.1**	**1.3**	**1.7**
PROTECTION	**2.8**	**2.6**	**4.4**	**2.8**	**2.7**	**5.4**	**3.6**	**3.7**	**3.6**	**4.6**	**5.7**	**8.0**	**2.7**	**3.1**	**5.1**
INSECTS	1.9	1.8	3.3	1.9	1.8	4.2	3.0	3.1	3.0	3.5	4.5	6.5	2.1	2.3	3.7
DISEASE	0.9	0.8	0.8	0.9	0.9	0.9	.6	.6	.6	.9	1.0	1.3	.5	.6	1.1
FIRE	0	0	0.3	0	0	0.3	0	0	0	.2	.2	.2	.1	.2	.3
PROGRAM TOTAL	**12.4**	**11.8**	**16.5**	**12.4**	**13.6**	**19.9**	**13.5**	**13.7**	**13.5**	**17.1**	**20.2**	**26.3**	**15.0**	**17.1**	**27.1**
CONSTRUCTION	**0.0**	**0.0**	**0.5**	**0.0**	**0.3**	**0.7**	**.3**	**.3**	**.3**	**.5**	**.8**	**1.8**	**.4**	**.6**	**1.8**
TOTAL RESEARCH	**13.8**	**13.4**	**18.8**	**13.8**	**15.6**	**22.9**	**15.7**	**15.9**	**15.7**	**20.1**	**23.6**	**30.9**	**17.3**	**19.8**	**31.7**

* Less than $50,000.

1/Totals include some Administrative Costs not shown in the body of the table.

ALTERNATIVE 3A			ALTERNATIVE 4			ALTERNATIVE 5			ALTERNATIVE 6			ALTERNATIVE 7			ALTERNATIVE 8			ALTERNATIVE 9		
High Wilderness			All Resources			Reduced			Implement Plans			High PNV			1980 RPA			High Productivity		
1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
(MILLIONS OF DOLLARS)																				
1.6	**1.8**	**3.1**	**.6**	**.8**	**1.2**	**.4**	**.4**	**.4**	**.7**	**.9**	**1.5**	**.6**	**.9**	**1.0**	**.7**	**.9**	**1.5**	**.7**	**.9**	**1.0**
1.6	1.8	3.1	.6	.8	1.2	.4	.4	.4	.7	.9	1.5	.6	.9	1.0	.7	.9	1.5	.7	.9	1.0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
.7	**.8**	**1.3**	**.4**	**.5**	**.7**	**.3**	**.3**	**.3**	**.4**	**.6**	**.8**	**.3**	**.4**	**.4**	**.4**	**.6**	**.8**	**.5**	**.8**	**.9**
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8.7	**9.9**	**15.9**	**9.0**	**11.4**	**17.2**	**6.9**	**6.6**	**6.5**	**10.0**	**14.3**	**21.1**	**8.6**	**14.0**	**18.6**	**10.0**	**14.3**	**21.1**	**11.1**	**12.9**	**15.8**
1.5	1.7	2.6	1.8	2.3	3.5	1.2	1.3	1.2	2.0	3.0	4.3	1.9	3.4	4.2	2.0	3.0	4.3	1.9	1.9	2.1
.2	.2	.3	.1	.1	.2	0	0	0	.1	.1	.2	0	.1	.1	.1	.1	.2	.1	.2	.2
4.8	5.4	8.8	4.3	5.4	8.0	3.7	3.3	3.3	4.7	6.8	9.7	3.9	7.0	9.2	4.7	6.8	9.7	5.5	6.6	7.6
.5	.6	.9	.7	.9	1.2	.5	.5	.5	.8	1.1	1.5	.8	1.1	1.3	.8	1.1	1.5	1.0	1.1	1.3
.5	.5	.8	.4	.5	.8	.3	.3	.3	.5	.6	.9	.3	.4	.6	.5	.6	.9	.4	.5	.7
.4	.5	1.0	.5	.7	1.1	.3	.4	.4	.6	.8	1.5	.4	.6	1.0	.6	.8	1.5	.7	.8	.9
.8	1.0	1.5	1.2	1.5	2.3	.8	.8	.8	1.3	1.9	2.9	1.3	1.4	2.1	1.3	1.9	2.9	1.4	1.7	2.3
0	0	0	0	0	.1	.1	0	0	0	0	.1	0	0	.1	0	0	.1	.1	.1	.2
1.1	**1.3**	**1.7**	**.5**	**.6**	**.8**	**.3**	**.4**	**.4**	**.5**	**.8**	**1.0**	**.4**	**.4**	**.4**	**.5**	**.8**	**1.0**	**.5**	**.6**	**.8**
2.7	**3.1**	**5.1**	**4.3**	**5.1**	**7.7**	**2.5**	**2.7**	**2.6**	**4.6**	**6.2**	**9.3**	**4.6**	**5.1**	**5.1**	**4.6**	**6.2**	**9.3**	**4.2**	**4.6**	**5.5**
2.1	2.3	3.7	3.4	3.9	5.9	2.1	2.2	2.1	3.6	4.8	7.1	3.5	3.6	3.5	3.6	4.8	7.1	3.3	3.7	4.4
.5	.6	1.1	.7	.9	1.4	.4	.5	.5	.8	1.1	1.8	.8	1.3	1.4	.8	1.1	1.8	.8	.8	.9
.1	.2	.3	.2	.2	.4	.0	.0	.0	.2	.3	.4	.1	.2	.2	.2	.3	.4	.1	.1	.2
15.0	**17.1**	**27.1**	**14.8**	**18.4**	**27.5**	**10.4**	**10.2**	**10.2**	**16.3**	**22.9**	**33.9**	**14.5**	**20.8**	**25.4**	**16.3**	**22.9**	**33.9**	**17.1**	**19.9**	**23.6**
.4	**.6**	**1.8**	**.4**	**.7**	**1.8**	**.1**	**.1**	**.1**	**.5**	**1.0**	**2.1**	**.4**	**.8**	**1.9**	**.5**	**1.0**	**2.1**	**.4**	**.7**	**.9**
17.3	**19.8**	**31.7**	**17.2**	**21.4**	**32.2**	**12.0**	**11.7**	**11.7**	**19.0**	**26.5**	**39.3**	**16.8**	**24.2**	**30.6**	**19.0**	**26.5**	**39.3**	**19.6**	**23.1**	**27.2**

TABLE H.22--FOREST PRODUCTS LABORATORY RESEARCH PROGRAM: SUMMARY BY ALTERNATIVE, 1986, 1990, and 2030 1/

INDICATOR	RECOMMENDED PROGRAM						ALTERNATIVE 1			ALTERNATIVE 2			ALTERNATIVE 3		
	Low Bound			High Bound			Constant			Market			Nonmarket		
	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
	(MILLIONS OF DOLLARS)														
WATER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WATERSHED	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOILS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MINERALS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RANGE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RECREATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FOREST RECREATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
URBAN FORESTS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WILDERNESS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TIMBER	9.3	9.3	13.9	9.3	11.7	17.3	11.8	11.9	11.7	13.5	18.2	23.0	12.2	14.2	21.3
INVENTORY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EVALUATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BIOLOGY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENETICS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PRODUCTION ECONOMICS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HARVESTING	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PROCESSING	8.7	8.7	13.1	8.7	11.0	16.4	11.1	11.2	10.9	12.6	17.0	21.6	11.4	13.3	19.9
MARKETING ECONOMICS	0.6	0.6	0.8	0.6	0.7	0.9	.7	.7	.8	.9	1.2	1.4	.8	.9	1.4
WILDLIFE-FISH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PROTECTION	0.9	1.0	1.2	0.9	1.0	1.3	.6	.6	.6	.6	.9	1.1	.6	.7	1.1
INSECTS	0.1	0.2	0.2	0.1	0.2	0.2	.1	.1	.1	.1	.2	.2	.1	.1	.2
DISEASE	0.8	0.8	1.0	0.8	0.8	1.1	.5	.5	.5	.5	.7	.9	.5	.6	.9
FIRE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PROGRAM TOTAL	10.3	10.2	15.1	10.3	12.7	18.6	12.4	12.5	12.2	14.2	19.1	24.2	12.8	15.0	22.4
CONSTRUCTION	0.0	0.0	0.4	0.0	0.3	0.6	.3	.3	.3	.4	.8	1.7	.4	.5	1.7
TOTAL RESEARCH	11.7	11.7	17.3	11.7	14.6	21.4	14.6	14.6	14.3	16.5	22.3	28.7	15.1	17.6	26.9

* Less than $50,000.

1/Totals include some Administrative Costs not shown in the body of the table.

ALTERNATIVE 3A			ALTERNATIVE 4			ALTERNATIVE 5			ALTERNATIVE 6			ALTERNATIVE 7			ALTERNATIVE 8			ALTERNATIVE 9		
High Wilderness			All Resources			Reduced			Implement Plans			High PNV			1980 RPA			High Productivity		
1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
(MILLIONS OF DOLLARS)																				
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
12.2	**14.2**	**21.3**	**13.0**	**16.8**	**25.4**	**9.2**	**9.4**	**9.4**	**14.4**	**20.9**	**31.3**	**13.6**	**21.3**	**31.2**	**14.4**	**20.9**	**31.3**	**15.0**	**18.6**	**23.1**
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11.4	13.3	19.9	12.0	15.0	22.5	8.7	8.7	8.7	13.2	19.0	28.1	12.0	18.8	27.9	13.2	19.0	28.1	14.0	17.4	21.7
.8	.9	1.4	1.0	1.8	2.9	.5	.6	.6	1.2	1.9	3.2	1.6	2.5	3.3	1.2	1.9	3.2	1.0	1.2	1.4
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
.6	**.7**	**1.1**	**.5**	**.4**	**.7**	**.5**	**.2**	**.2**	**.5**	**.5**	**1.0**	**.4**	**.5**	**.8**	**.5**	**.5**	**1.0**	**.7**	**.9**	**1.1**
.1	.1	.2	.1	.1	.1	.2	.0	.0	.1	.1	.2	.1	.1	.1	.1	.1	.2	.1	.2	.2
.5	.6	.9	.4	.3	.6	.3	.2	.2	.4	.4	.8	.3	.4	.7	.4	.4	.8	.6	.7	.9
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12.8	**15.0**	**22.4**	**13.5**	**17.2**	**26.1**	**9.7**	**9.4**	**9.5**	**15.0**	**21.5**	**32.2**	**14.1**	**21.7**	**32.0**	**15.0**	**21.5**	**32.2**	**15.8**	**19.5**	**24.2**
.4	**.5**	**1.7**	**.4**	**.6**	**1.7**	**.1**	**.1**	**.1**	**.5**	**.9**	**2.0**	**.4**	**.9**	**2.0**	**.5**	**.9**	**2.0**	**.4**	**.7**	**.9**
15.1	**17.6**	**26.9**	**15.8**	**20.0**	**30.6**	**11.1**	**10.9**	**10.9**	**17.5**	**25.0**	**37.4**	**16.6**	**25.3**	**37.3**	**17.5**	**25.0**	**37.4**	**18.1**	**22.7**	**28.0**

TABLE H.23--NORTH CENTRAL STATION RESEARCH PROGRAM: SUMMARY BY ALTERNATIVE, 1986, 1990, and 2030 1/

INDICATOR	RECOMMENDED PROGRAM						ALTERNATIVE 1			ALTERNATIVE 2			ALTERNATIVE 3		
	Low Bound			High Bound			Constant			Market			Nonmarket		
	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
	(MILLIONS OF DOLLARS)														
WATER	**.6**	**.8**	**1.1**	**.6**	**.9**	**1.2**	**.6**	**.5**	**.5**	**.5**	**.6**	**.8**	**1.0**	**1.2**	**2.2**
WATERSHED	.5	.6	.8	.5	.7	.9	.5	.4	.4	.4	.5	.7	.8	1.0	1.9
SOILS	.1	.2	.3	.1	.2	.3	.1	.1	.1	.1	.1	.1	.2	.2	.3
MINERALS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RANGE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RECREATION	**.3**	**.3**	**.8**	**.3**	**.5**	**1.1**	**.5**	**.5**	**.5**	**.3**	**.4**	**.7**	**1.0**	**1.1**	**2.3**
FOREST RECREATION	.2	.2	.5	.2	.3	.7	.3	.3	.3	.2	.3	.5	.7	.7	1.5
URBAN FORESTS	.1	.1	.3	.1	.2	.4	.2	.2	.2	.1	.1	.2	.3	.4	.8
WILDERNESS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TIMBER	**5.2**	**4.8**	**6.6**	**5.2**	**5.8**	**8.1**	**7.0**	**6.9**	**6.9**	**7.0**	**10.2**	**12.4**	**6.1**	**6.8**	**10.1**
INVENTORY	1.2	1.1	1.1	1.2	1.1	1.4	1.2	1.2	1.2	1.2	1.8	2.1	1.4	1.6	2.3
EVALUATION	.3	.3	.5	.3	.3	.6	0	0	0	.4	.5	.6	.4	.4	.6
BIOLOGY	2.3	2.0	2.7	2.3	2.5	3.2	3.0	3.0	3.0	2.7	4.1	5.1	2.3	2.6	3.8
GENETICS	.3	.5	.7	.3	.6	.8	.9	.8	.8	.7	1.0	1.2	.5	.5	.8
PRODUCTION ECONOMICS	.2	.2	.4	.2	.3	.6	.5	.5	.5	.5	.7	.9	.4	.4	.5
HARVESTING	.5	.4	.6	.5	.6	.8	.7	.7	.7	.8	1.2	1.3	.6	.8	1.3
PROCESSING	.3	.3	.6	.3	.4	.7	.6	.6	.6	.6	.8	1.1	.5	.5	.7
MARKETING ECONOMICS	0	0	0	0	0	0	.1	.1	.1	.1	.1	.1	0	0	.1
WILDLIFE-FISH	**.4**	**.5**	**.9**	**.4**	**.6**	**1.0**	**.5**	**.5**	**.5**	**.4**	**.6**	**.8**	**.8**	**1.0**	**1.6**
PROTECTION	**1.3**	**1.1**	**1.5**	**1.3**	**1.1**	**1.7**	**1.3**	**1.4**	**1.3**	**1.4**	**2.0**	**2.6**	**1.2**	**1.5**	**2.2**
INSECTS	.5	.5	.5	.5	.5	.6	.4	.5	.4	.4	.6	.8	.6	.7	1.0
DISEASE	.4	.3	.5	.4	.3	.5	.4	.4	.4	.5	.7	.9	.3	.4	.6
FIRE	.4	.3	.5	.4	.3	.6	.5	.5	.5	.5	.7	.9	.3	.4	.6
PROGRAM TOTAL	**7.9**	**7.5**	**10.9**	**7.9**	**8.9**	**13.1**	**9.7**	**9.7**	**9.8**	**9.5**	**13.7**	**17.3**	**10.1**	**11.4**	**18.3**
CONSTRUCTION	**.0**	**.0**	**.4**	**.0**	**.2**	**.6**	**.2**	**.2**	**.2**	**.3**	**.6**	**1.3**	**.3**	**.4**	**1.3**
TOTAL RESEARCH	**8.9**	**8.6**	**12.6**	**8.9**	**10.3**	**15.3**	**11.3**	**11.2**	**11.3**	**11.1**	**16.1**	**20.7**	**11.8**	**13.5**	**21.7**

* Less than $50,000.

1/Totals include some Administrative Costs not shown in the body of the table.

ALTERNATIVE 3A High Wilderness			ALTERNATIVE 4 All Resources			ALTERNATIVE 5 Reduced			ALTERNATIVE 6 Implement Plans			ALTERNATIVE 7 High PNV			ALTERNATIVE 8 1980 RPA			ALTERNATIVE 9 High Productivity		
1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
(MILLIONS OF DOLLARS)																				
1.0	**1.2**	**2.2**	**.6**	**1.2**	**1.8**	**.4**	**.3**	**.3**	**.9**	**1.4**	**2.3**	**.6**	**1.4**	**1.6**	**.9**	**1.4**	**2.3**	**.6**	**1.6**	**2.2**
.8	1.0	1.9	.5	1.0	1.6	.3	.3	.3	.8	1.2	2.0	.5	1.3	1.4	.8	1.2	2.0	.5	1.3	1.7
.2	.2	.3	.1	.2	.2	.1	0	0	.1	.2	.3	.1	.1	.2	.1	.2	.3	.1	.3	.5
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
1.0	**1.1**	**2.3**	**.7**	**1.1**	**1.5**	**.2**	**.2**	**.2**	**.9**	**1.2**	**1.6**	**.4**	**.4**	**.6**	**.9**	**1.2**	**1.6**	**.5**	**.5**	**.5**
.7	.7	1.5	.5	.7	.9	.2	.2	.2	.6	.8	.9	.2	.2	.3	.6	.8	.9	.3	.3	.3
.3	.4	.8	.2	.4	.6	.0	.0	.0	.3	.4	.7	.2	.2	.3	.3	.4	.7	.2	.2	.2
6.1	**6.8**	**10.1**	**6.4**	**7.6**	**11.0**	**5.7**	**5.4**	**5.4**	**6.9**	**9.3**	**13.9**	**6.5**	**9.0**	**16.4**	**6.9**	**9.3**	**13.9**	**9.0**	**10.9**	**13.3**
1.4	1.6	2.3	1.0	1.3	2.0	1.3	1.2	1.2	1.2	1.8	2.5	1.3	1.5	2.8	1.2	1.8	2.5	1.3	1.8	2.1
.4	.4	.6	.3	.4	.5	.1	0	0	.3	.4	.6	.2	.4	.5	.3	.4	.6	.5	.5	.6
2.3	2.6	3.8	2.9	3.1	4.6	2.3	2.4	2.4	3.0	3.9	5.6	2.5	3.7	6.3	3.0	3.9	5.6	3.5	4.1	5.1
.5	.5	.8	.7	.7	.9	.5	.5	.5	.7	.8	1.2	.6	.9	1.5	.7	.8	1.2	1.0	1.0	1.2
.4	.4	.5	.4	.5	.7	.4	.3	.3	.4	.6	.9	.5	.7	1.4	.4	.6	.9	.7	.7	.9
.6	.8	1.3	.7	.9	1.3	.6	.5	.5	.8	1.0	1.9	.9	1.2	1.9	.8	1.0	1.9	.9	1.2	1.3
.5	.5	.7	.4	.6	.9	.4	.4	.4	.5	.7	1.1	.4	.5	1.4	.5	.7	1.1	.8	1.0	1.1
0	0	.1	0	.1	.1	.1	.1	.1	0	.1	.1	.1	.1	.6	0	.1	.1	.3	.6	1.0
.8	**1.0**	**1.6**	**.7**	**.9**	**1.3**	**.4**	**.3**	**.3**	**.8**	**1.1**	**1.6**	**.6**	**.9**	**1.3**	**.8**	**1.1**	**1.6**	**.6**	**.7**	**.8**
1.2	**1.5**	**2.2**	**1.2**	**1.4**	**2.2**	**.9**	**1.0**	**1.0**	**1.6**	**2.2**	**3.1**	**1.3**	**1.8**	**3.3**	**1.6**	**2.2**	**3.1**	**1.8**	**2.1**	**1.8**
.6	.7	1.0	.4	.4	.6	.3	.3	.3	.7	.9	1.1	.5	.6	1.2	.7	.9	1.1	.6	.7	.9
.3	.4	.6	.4	.5	.8	.3	.3	.3	.5	.6	1.0	.5	.7	.8	.5	.6	1.0	.6	.7	.9
.3	.4	.6	.4	.5	.8	.3	.4	.4	.4	.7	1.0	.3	.5	1.3	.4	.7	1.0	.6	.7	.9
10.1	**11.4**	**18.3**	**9.8**	**12.1**	**18.1**	**7.5**	**7.3**	**7.3**	**11.3**	**15.4**	**22.6**	**9.5**	**13.7**	**23.4**	**11.3**	**15.4**	**22.6**	**12.3**	**15.6**	**19.5**
.3	**.4**	**1.3**	**.3**	**.5**	**1.3**	**0**	**0**	**0**	**.4**	**.7**	**1.5**	**.3**	**.6**	**1.3**	**.4**	**.7**	**1.5**	**.3**	**.5**	**.7**
11.8	**13.5**	**21.7**	**11.5**	**14.2**	**21.4**	**8.6**	**8.4**	**8.4**	**13.2**	**17.9**	**26.5**	**11.1**	**16.1**	**27.1**	**13.2**	**17.9**	**26.5**	**14.1**	**18.1**	**22.6**

TABLE H.24--INTERMOUNTAIN STATION RESEARCH PROGRAM: SUMMARY BY ALTERNATIVE, 1986, 1990, and 2030 1/

INDICATOR	RECOMMENDED PROGRAM						ALTERNATIVE 1			ALTERNATIVE 2			ALTERNATIVE 3		
	Low Bound			High Bound			Constant			Market			Nonmarket		
	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
	(MILLIONS OF DOLLARS)														
WATER	1.2	1.4	1.5	1.2	1.4	1.6	.9	.8	.8	1.0	1.5	1.8	.9	1.1	1.9
WATERSHED	1.2	1.3	1.4	1.2	1.3	1.5	.9	.8	.8	1.0	1.5	1.6	.9	1.1	1.7
SOILS	0	0.1	0.1	0	0.1	0.1	0	0	0	0	0	.2	0	0	.2
MINERALS	0.6	0.6	0.7	0.6	0.6	0.8	.4	.4	.5	.4	.5	1.0	.5	.5	1.0
RANGE	0.7	0.7	0.8	0.7	0.8	0.9	1.0	1.2	1.4	1.2	2.0	2.8	.8	1.1	1.6
RECREATION	0.1	0.1	0.3	0.1	0.1	0.4	0	0	0	0	0	0	.1	.4	1.4
FOREST RECREATION	0.1	0.1	0.2	0.1	0.1	0.3	0	0	0	0	0	0	.1	.2	.7
URBAN FORESTS	0	0	0.1	0	0	0.1	0	0	0	0	0	0	0	.2	.7
WILDERNESS	0.2	0.2	0.4	0.1	0.3	0.5	.2	.2	.3	.1	.1	.1	.2	.6	1.2
TIMBER	3.3	3.0	4.5	3.3	3.7	5.5	3.9	4.1	4.3	4.7	6.6	7.2	4.2	4.3	5.6
INVENTORY	0.8	0.7	0.7	0.8	0.8	0.9	1.1	1.0	1.0	.9	1.2	1.3	1.0	1.0	1.5
EVALUATION	0.2	0.1	0.4	0.2	0.1	0.4	.1	.1	.2	.1	.1	.2	.3	.3	.4
BIOLOGY	1.1	1.0	1.6	1.1	1.2	1.9	1.2	1.3	1.5	1.5	2.3	2.7	1.4	1.6	2.1
GENETICS	0.3	0.3	0.4	0.3	0.4	0.5	.5	.5	.4	.6	.8	.8	.3	.4	.5
PRODUCTION ECONOMICS	0.1	0.1	0.1	0.1	0.1	0.1	0	.1	.1	.1	.2	.3	.1	.1	.2
HARVESTING	0.6	0.5	0.9	0.6	0.8	1.2	.9	.9	1.0	1.1	1.5	1.7	1.0	.9	.9
PROCESSING	0.1	0.1	0.2	0.1	0.1	0.3	.1	.2	0	.3	.4	0	.1	0	0
MARKETING ECONOMICS	0.1	0.2	0.2	0.1	0.2	0.2	0	0	.1	.1	.1	.2	0	0	0
WILDLIFE-FISH	0.5	0.5	0.9	0.5	0.7	1.0	.5	.5	.5	.5	.7	1.0	.8	.9	2.0
PROTECTION	2.8	2.8	3.2	2.8	2.9	3.8	2.7	2.7	2.6	3.1	4.4	5.8	3.2	3.5	4.9
INSECTS	0.6	0.7	0.7	0.6	0.7	0.9	.4	.5	.6	.7	.9	1.5	.7	.8	1.0
DISEASE	0.4	0.5	0.6	0.4	0.5	0.6	.2	.1	.2	.3	.6	.9	.4	.3	.7
FIRE	1.8	1.6	2.0	1.8	1.7	2.3	2.1	2.1	1.8	2.1	2.9	3.4	2.1	2.4	3.2
PROGRAM TOTAL	9.4	9.2	12.3	9.4	10.5	14.5	9.7	9.8	10.2	11.0	15.9	19.8	10.7	12.4	19.5
CONSTRUCTION	0.0	0.0	0.4	0.0	0.2	0.6	.2	.2	.2	.3	.6	1.4	.3	.4	1.4
TOTAL RESEARCH	10.5	10.5	14.1	10.5	12.0	16.8	11.5	11.5	11.9	12.9	18.5	23.4	12.6	14.6	23.1

* Less than $50,000.

1/Totals include some Administrative Costs not shown in the body of the table.

ALTERNATIVE 3A High Wilderness			ALTERNATIVE 4 All Resources			ALTERNATIVE 5 Reduced			ALTERNATIVE 6 Implement Plans			ALTERNATIVE 7 High PNV			ALTERNATIVE 8 1980 RPA			ALTERNATIVE 9 High Productivity		
1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
(MILLIONS OF DOLLARS)																				
.9	**1.1**	**1.9**	**1.2**	**1.2**	**1.6**	**.6**	**.6**	**.6**	**1.1**	**1.5**	**1.9**	**.8**	**1.2**	**1.3**	**1.1**	**1.5**	**1.9**	**1.0**	**1.3**	**1.4**
.9	1.1	1.7	1.2	1.2	1.6	.6	.6	.6	1.1	1.5	1.9	.8	1.2	1.3	1.1	1.5	1.9	1.0	1.3	1.4
0	0	.2	0	0	.2	0	0	0	0	.1	.3	0	.1	.1	0	.1	.3	0	0	0
.5	**.5**	**1.0**	**.4**	**.5**	**.9**	**.4**	**.3**	**.3**	**.6**	**.6**	**1.0**	**.4**	**.6**	**.9**	**.6**	**.6**	**1.0**	**.4**	**.2**	**.3**
.8	**1.1**	**1.6**	**1.0**	**1.6**	**2.4**	**.9**	**1.0**	**1.0**	**1.1**	**1.8**	**2.7**	**1.3**	**2.1**	**3.7**	**1.1**	**1.8**	**2.7**	**1.5**	**2.0**	**2.3**
.1	**.4**	**1.4**	**.1**	**.4**	**1.0**	**0**	**0**	**0**	**.1**	**.5**	**1.1**	**.1**	**.3**	**.7**	**.1**	**.5**	**1.1**	**0**	**0**	**0**
.1	.2	.7	.1	.3	.5	0	0	0	.1	.3	.5	.1	.3	.7	.1	.3	.5	0	0	0
0	.2	.7	0	.1	.5	0	0	0	0	.2	.6	.0	.0	.0	0	.2	.6	0	0	0
.2	**.6**	**1.2**	**.2**	**.5**	**.6**	**0**	**0**	**0**	**.3**	**.6**	**.7**	**.1**	**.2**	**.3**	**.3**	**.6**	**.7**	**.2**	**0**	**0**
4.2	**4.3**	**5.6**	**4.4**	**5.0**	**6.4**	**3.6**	**3.4**	**3.4**	**4.8**	**6.3**	**8.4**	**4.6**	**6.1**	**8.0**	**4.8**	**6.3**	**8.4**	**5.3**	**6.6**	**7.6**
1.0	1.0	1.5	.8	.8	1.1	1.1	.8	.8	1.0	1.1	1.4	1.1	.9	1.1	1.0	1.1	1.4	1.1	1.0	1.0
.3	.3	.4	.2	.2	.3	.2	.2	.2	.2	.3	.4	.2	.2	.2	.2	.3	.4	.2	.1	.2
1.4	1.6	2.1	1.6	1.9	2.6	.9	1.0	1.0	1.7	2.5	3.2	1.3	2.4	3.2	1.7	2.5	3.2	1.5	2.1	3.1
.3	.4	.5	.5	.5	.5	.4	.4	.4	.5	.6	.7	.5	.6	.7	.5	.6	.7	.7	.8	.9
.1	.1	.2	.1	.1	.2	0	0	0	.1	.1	.3	.1	.1	.1	.1	.1	.3	0	.2	.3
1.0	.9	.9	.9	1.1	1.6	.9	1.0	1.0	1.0	1.3	2.2	1.2	1.5	2.2	1.0	1.3	2.2	1.3	1.7	1.8
.1	0	0	.2	.3	0	.1	0	0	.2	.3	0	.2	.3	0	.2	.3	0	.3	.5	0
0	0	0	.1	.1	.1	0	0	0	.1	.1	.2	0	.1	.5	.1	.1	.2	.2	.2	.3
.8	**.9**	**2.0**	**.7**	**.9**	**1.7**	**.3**	**.3**	**.3**	**.8**	**1.1**	**2.1**	**.7**	**1.1**	**2.1**	**.8**	**1.1**	**2.1**	**.5**	**.7**	**1.0**
3.2	**3.5**	**4.9**	**3.1**	**3.5**	**4.8**	**2.6**	**2.3**	**2.3**	**3.2**	**4.5**	**6.1**	**3.2**	**4.5**	**4.5**	**3.2**	**4.5**	**6.1**	**3.1**	**2.4**	**2.6**
.7	.8	1.0	.7	.8	1.3	.4	.3	.3	.7	1.1	1.7	.7	1.0	1.7	.7	1.1	1.7	.6	.6	.6
.4	.3	.7	.5	.6	.8	.2	.2	.2	.5	.7	1.0	.4	.6	1.4	.5	.7	1.0	.2	.1	.2
2.1	2.4	3.2	1.9	2.1	2.7	2.0	1.8	1.8	2.0	2.7	3.4	2.1	2.9	1.4	2.0	2.7	3.4	2.3	1.7	1.8
10.7	**12.4**	**19.5**	**11.2**	**13.7**	**19.8**	**8.4**	**7.8**	**7.8**	**12.2**	**16.9**	**24.2**	**11.3**	**16.2**	**21.7**	**12.2**	**16.9**	**24.2**	**11.8**	**13.2**	**15.3**
.3	**.4**	**1.4**	**.3**	**.5**	**1.4**	**0**	**0**	**0**	**.4**	**.7**	**1.7**	**.3**	**.6**	**1.4**	**.4**	**.7**	**1.7**	**.3**	**.4**	**.5**
12.6	**14.6**	**23.1**	**13.0**	**16.0**	**23.4**	**9.6**	**9.0**	**9.0**	**14.3**	**19.7**	**28.3**	**13.1**	**18.8**	**25.6**	**14.3**	**19.7**	**28.3**	**13.5**	**15.1**	**17.4**

TABLE H.25--ROCKY MOUNTAIN STATION RESEARCH PROGRAM: SUMMARY BY ALTERNATIVE 1986, 1990, and 2030 1/

INDICATOR	RECOMMENDED PROGRAM						ALTERNATIVE 1			ALTERNATIVE 2			ALTERNATIVE 3		
	Low Bound			High Bound			Constant			Market			Nonmarket		
	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
	(MILLIONS OF DOLLARS)														
WATER	**3.0**	**2.2**	**2.4**	**3.0**	**2.3**	**2.5**	**2.5**	**2.4**	**2.3**	**2.2**	**3.0**	**3.1**	**2.1**	**2.0**	**2.1**
WATERSHED	3.0	2.2	2.4	3.0	2.3	2.5	2.5	2.4	2.3	2.2	3.0	3.1	2.1	2.0	2.1
SOILS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MINERALS	**0.6**	**0.4**	**0.4**	**0.6**	**0.4**	**0.5**	**.4**	**.4**	**.7**	**.8**	**1.0**	**.8**	**.6**	**.8**	**.8**
RANGE	**0.6**	**0.7**	**0.8**	**0.6**	**0.8**	**0.9**	**.4**	**.5**	**.5**	**1.1**	**1.9**	**2.5**	**.9**	**1.1**	**1.6**
RECREATION	**0.1**	**0.1**	**0.2**	**0.1**	**0.1**	**0.3**	**.1**	**.1**	**.1**	**.1**	**.2**	**.3**	**.5**	**.5**	**.5**
FOREST RECREATION	0.1	0.1	0.2	0.1	0.1	0.3	.1	.1	.1	.1	.1	.1	.3	.3	.2
URBAN FORESTS	0	0	0	0	0	0	0	0	0	0	.1	.2	.2	.2	.3
WILDERNESS	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**.1**	**.1**	**.1**	**.2**	**.2**
TIMBER	**2.6**	**2.2**	**4.0**	**2.6**	**2.4**	**4.8**	**2.7**	**2.5**	**2.8**	**3.8**	**4.7**	**6.3**	**3.1**	**3.7**	**4.7**
INVENTORY	0.5	0.3	0.7	0.5	0.3	0.9	.5	.4	.7	.8	.8	1.0	.5	.5	.7
EVALUATION	1.1	1.1	1.3	1.1	1.1	1.5	1.0	1.0	1.0	1.2	1.6	1.6	1.3	1.3	1.3
BIOLOGY	1.0	0.8	1.7	1.0	1.0	2.0	1.2	1.1	1.1	1.4	2.1	2.2	1.3	1.7	1.7
GENETICS	0	0	0.3	0	0	0.4	0	0	0	0	.2	.6	0	.2	.5
PRODUCTION ECONOMICS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HARVESTING	0	0	0	0	0	0	0	0	0	0	0	.9	0	0	.5
PROCESSING	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MARKETING ECONOMICS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WILDLIFE-FISH	**0.7**	**0.8**	**1.0**	**0.7**	**1.0**	**1.1**	**1.3**	**1.2**	**1.2**	**1.0**	**1.3**	**1.3**	**1.2**	**1.0**	**1.6**
PROTECTION	**1.8**	**2.2**	**2.2**	**1.8**	**2.2**	**2.6**	**1.7**	**1.8**	**1.6**	**1.5**	**2.1**	**2.9**	**1.7**	**1.9**	**2.7**
INSECTS	0.4	0.5	0.5	0.4	0.5	0.6	.3	.4	.3	.3	.4	.6	.5	.6	1.0
DISEASE	0.4	0.5	0.5	0.4	0.5	0.6	.6	.6	.6	.4	.6	.7	.5	.5	.8
FIRE	1.0	1.2	1.2	1.0	1.2	1.4	.8	.8	.7	.8	1.1	1.6	.7	.8	.9
PROGRAM TOTAL	**9.3**	**8.4**	**11.0**	**9.3**	**9.2**	**12.7**	**9.1**	**8.9**	**9.3**	**10.2**	**14.2**	**17.5**	**10.0**	**11.3**	**14.2**
CONSTRUCTION	**0.0**	**0.0**	**0.4**	**0.0**	**0.2**	**0.6**	**.2**	**.2**	**.2**	**.3**	**.6**	**1.3**	**.3**	**.4**	**1.3**
TOTAL RESEARCH	**10.4**	**9.6**	**12.8**	**10.4**	**10.7**	**15.0**	**10.7**	**10.5**	**10.9**	**11.9**	**16.6**	**20.9**	**11.7**	**13.3**	**17.6**

* Less than $50,000.

1/Totals include some Administrative Costs not shown in the body of the table.

ALTERNATIVE 3A High Wilderness			ALTERNATIVE 4 All Resources			ALTERNATIVE 5 Reduced			ALTERNATIVE 6 Implement Plans			ALTERNATIVE 7 High PNV			ALTERNATIVE 8 1980 RPA			ALTERNATIVE 9 High Productivity		
1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
									(MILLIONS OF DOLLARS)											
2.1	**2.0**	**2.1**	**2.3**	**2.4**	**2.9**	**1.6**	**1.6**	**1.6**	**2.4**	**3.0**	**3.3**	**2.4**	**3.1**	**3.2**	**2.4**	**3.0**	**3.3**	**2.8**	**3.3**	**3.5**
2.1	2.0	2.1	2.3	2.4	2.9	1.6	1.6	1.6	2.4	3.0	3.3	2.4	3.1	3.2	2.4	3.0	3.3	2.8	3.3	3.5
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.6	**.8**	**.8**	**.7**	**.8**	**.9**	**0**	**0**	**0**	**.6**	**1.0**	**1.0**	**.6**	**1.1**	**.6**	**.6**	**1.0**	**1.0**	**.4**	**.5**	**.5**
.9	**1.1**	**1.6**	**.9**	**1.4**	**1.8**	**.5**	**.8**	**.8**	**1.0**	**1.8**	**2.4**	**1.2**	**1.9**	**2.3**	**1.0**	**1.8**	**2.4**	**.6**	**1.2**	**1.4**
.5	**.5**	**.5**	**.4**	**.4**	**.4**	**.1**	**0**	**0**	**.4**	**.5**	**.5**	**.3**	**.2**	**.4**	**.4**	**.5**	**.5**	**.1**	**.2**	**.2**
.3	.3	.2	.2	.2	.2	.1	0	0	.2	.3	.3	.3	.2	.4	.2	.3	.3	.1	.2	.2
.2	.2	.3	.2	.2	.2	0	0	0	.2	.2	.2	0	0	0	.2	.2	.2	0	0	0
.1	**.2**	**.2**	**.1**	**.2**	**.2**	**0**	**0**	**0**	**.2**	**.2**	**.2**	**.1**	**.1**	**.1**	**.2**	**.2**	**.2**	**0**	**0**	**0**
3.1	**3.7**	**4.7**	**3.7**	**4.4**	**4.8**	**2.2**	**2.4**	**2.5**	**4.1**	**5.2**	**5.7**	**3.5**	**5.3**	**5.9**	**4.1**	**5.2**	**5.7**	**3.6**	**3.7**	**4.5**
.5	.5	.7	.6	.8	.8	.4	.3	.4	.7	.8	.7	.6	.8	1.0	.7	.8	.7	.7	.7	.8
1.3	1.3	1.3	1.4	1.3	1.4	.7	.8	.8	1.5	1.4	1.5	1.1	1.6	1.4	1.5	1.4	1.5	1.1	1.0	1.0
1.3	1.7	1.7	1.4	1.8	2.2	1.1	1.3	1.3	1.6	2.3	3.0	1.5	2.2	2.9	1.6	2.3	3.0	1.3	1.4	1.8
0	.2	.5	.3	.5	.4	0	0	0	.3	.7	.5	.3	.7	.6	.3	.7	.5	.5	.6	.6
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	.5	0	0	.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.3
1.2	**1.0**	**1.6**	**.8**	**.9**	**1.3**	**1.1**	**.7**	**.7**	**.9**	**1.1**	**2.0**	**1.0**	**1.0**	**1.5**	**.9**	**1.1**	**2.0**	**1.4**	**1.6**	**2.0**
1.7	**1.9**	**2.7**	**1.2**	**1.7**	**2.7**	**1.5**	**1.5**	**1.5**	**1.6**	**2.8**	**3.6**	**1.2**	**2.2**	**2.6**	**1.6**	**2.8**	**3.6**	**1.0**	**2.1**	**2.7**
.5	.6	1.0	.3	.4	.6	.3	.4	.4	.3	.8	.9	.2	.4	.5	.3	.8	.9	.4	.5	.6
.5	.5	.8	.3	.4	.7	.5	.5	.5	.6	.8	.9	.4	.8	1.0	.6	.8	.9	.6	.6	.6
.7	.8	.9	.6	.9	1.4	.7	.6	.6	.7	1.2	1.8	.6	1.0	1.1	.7	1.2	1.8	.9	1.0	1.5
10.0	**11.3**	**14.2**	**10.2**	**12.4**	**15.9**	**7.0**	**7.1**	**7.1**	**11.2**	**15.7**	**18.8**	**10.4**	**15.2**	**16.8**	**11.2**	**15.7**	**18.8**	**10.8**	**12.5**	**14.9**
.3	**.4**	**1.3**	**.3**	**.5**	**1.3**	**0**	**0**	**0**	**.4**	**.7**	**1.6**	**.3**	**.7**	**1.5**	**.4**	**.7**	**1.6**	**.3**	**.4**	**.5**
11.7	**13.3**	**17.6**	**12.0**	**14.6**	**19.3**	**8.1**	**8.1**	**8.1**	**13.1**	**18.3**	**22.7**	**12.3**	**17.8**	**21.1**	**13.1**	**18.3**	**22.7**	**12.4**	**14.3**	**16.8**

TABLE H.26--PACIFIC SOUTHWEST STATION RESEARCH PROGRAM: SUMMARY BY ALTERNATIVE, 1986, 1990, and 2030 1/

INDICATOR	RECOMMENDED PROGRAM						ALTERNATIVE 1			ALTERNATIVE 2			ALTERNATIVE 3		
	Low Bound			High Bound			Constant			Market			Nonmarket		
	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
	(MILLIONS OF DOLLARS)														
WATER	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**	**1.3**	**.7**	**1.0**	**.9**	**1.0**	**1.2**	**2.0**	**1.0**	**1.1**	**1.9**
WATERSHED	1.1	1.1	1.1	1.1	1.1	1.2	.6	.8	.7	.8	1.0	1.7	.8	.9	1.6
SOILS	0.1	0.1	0.1	0.1	0.1	0.1	.1	.2	.2	.2	.2	.3	.2	.2	.3
MINERALS	0	0	0	0	0	0	**.2**	**.2**	**.3**	**.2**	**.3**	**.5**	**.1**	**.1**	**.5**
RANGE	**0.2**	**0.3**	**0.4**	**0.2**	**0.3**	**0.4**	**.8**	**.5**	**.5**	**.6**	**.8**	**1.0**	**.6**	**.6**	**.7**
RECREATION	**0.2**	**0.3**	**0.5**	**0.2**	**0.4**	**0.7**	**.4**	**.3**	**.3**	**.3**	**.4**	**.7**	**.5**	**.5**	**.8**
FOREST RECREATION	0.1	0.2	0.4	0.1	0.3	0.6	.2	.2	.2	.2	.3	.4	.4	.4	.7
URBAN FORESTS	0.1	0.1	0.1	0.1	0.1	0.1	.2	.1	.1	.1	.1	.3	.1	.1	.1
WILDERNESS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TIMBER	**1.7**	**2.0**	**3.0**	**1.7**	**2.5**	**3.6**	**2.9**	**2.8**	**2.9**	**2.7**	**3.6**	**5.3**	**2.8**	**3.1**	**5.5**
INVENTORY	0	0	0	0	0	0	0	0	.1	0	.1	.1	.1	.1	.1
EVALUATION	0.2	0.3	0	0.2	0.3	0	.1	.1	.2	.2	.4	.4	.2	.2	.4
BIOLOGY	0.8	1.0	2.1	0.8	1.3	2.5	2.2	2.0	2.0	1.9	2.2	3.8	1.9	2.2	4.0
GENETICS	0.7	0.7	0.9	0.7	0.9	1.1	.6	.7	.6	.6	.8	.9	.6	.6	1.0
PRODUCTION ECONOMICS	0	0	0	0	0	0	0	0	0	0	.1	.1	0	0	0
HARVESTING	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PROCESSING	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MARKETING ECONOMICS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WILDLIFE-FISH	**0.6**	**0.5**	**1.1**	**0.6**	**0.7**	**1.2**	**1.0**	**.9**	**.9**	**1.0**	**1.2**	**1.5**	**1.0**	**1.1**	**1.6**
PROTECTION	**4.0**	**3.4**	**3.6**	**4.0**	**3.5**	**4.3**	**3.4**	**3.7**	**3.7**	**3.9**	**5.4**	**6.8**	**3.7**	**4.3**	**6.6**
INSECTS	1.6	1.5	1.4	1.6	1.5	1.8	1.6	1.7	1.7	1.9	2.3	3.1	1.6	1.7	2.6
DISEASE	0.5	0.4	0.6	0.5	0.4	0.6	.4	.4	.4	.4	.7	.7	.5	.6	.7
FIRE	1.9	1.5	1.6	1.9	1.6	1.9	1.4	1.6	1.6	1.6	2.4	3.0	1.6	2.0	3.3
PROGRAM TOTAL	**8.0**	**7.7**	**9.8**	**8.0**	**8.6**	**11.5**	**9.4**	**9.2**	**9.3**	**9.7**	**12.7**	**17.6**	**9.5**	**10.7**	**17.6**
CONSTRUCTION	**0.0**	**0.0**	**0.3**	**0.0**	**0.2**	**0.5**	**.2**	**.2**	**.2**	**.3**	**.6**	**1.2**	**.3**	**.4**	**1.2**
TOTAL RESEARCH	**8.9**	**8.8**	**11.3**	**8.9**	**10.0**	**13.4**	**10.8**	**10.8**	**10.9**	**11.2**	**15.1**	**20.9**	**11.1**	**12.7**	**20.8**

* Less than $50,000.

1/Totals include some Administrative Costs not shown in the body of the table.

ALTERNATIVE 3A High Wilderness			ALTERNATIVE 4 All Resources			ALTERNATIVE 5 Reduced			ALTERNATIVE 6 Implement Plans			ALTERNATIVE 7 High PNV			ALTERNATIVE 8 1980 RPA			ALTERNATIVE 9 High Productivity		
1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
(MILLIONS OF DOLLARS)																				
1.0	**1.1**	**1.9**	**.8**	**1.1**	**1.7**	**.5**	**.7**	**.7**	**1.0**	**1.5**	**2.0**	**.7**	**1.5**	**1.6**	**1.0**	**1.5**	**2.0**	**1.0**	**1.1**	**1.7**
.8	.9	1.6	.7	.9	1.4	.4	.6	.6	.8	1.3	1.7	.6	1.3	1.4	.8	1.3	1.7	.8	.9	1.4
.2	.2	.3	.1	.2	.3	.1	.1	.1	.2	.2	.3	.1	.2	.2	.2	.2	.3	.2	.2	.3
.1	**.1**	**.5**	**.2**	**.3**	**.5**	**.0**	**.2**	**.2**	**.2**	**.4**	**.6**	**.2**	**.3**	**.3**	**.2**	**.4**	**.6**	**.2**	**.3**	**.3**
.6	**.6**	**.7**	**.6**	**.6**	**.8**	**.4**	**.4**	**.4**	**.8**	**.8**	**.8**	**.7**	**.9**	**1.0**	**.8**	**.8**	**.8**	**1.0**	**1.3**	**2.3**
.5	**.5**	**.8**	**.4**	**.5**	**.9**	**.2**	**.2**	**.2**	**.6**	**.7**	**.9**	**.4**	**.7**	**.8**	**.6**	**.7**	**.9**	**.4**	**.3**	**.3**
.4	.4	.7	.3	.4	.5	.2	.2	.2	.4	.5	.5	.2	.4	.4	.4	.5	.5	.2	.2	.2
.1	.1	.1	.1	.1	.4	.0	.0	.0	.2	.2	.4	.2	.3	.4	.2	.2	.4	.2	.1	.1
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
2.8	**3.1**	**5.5**	**2.7**	**3.8**	**6.1**	**2.2**	**2.2**	**2.0**	**3.3**	**4.7**	**8.1**	**2.3**	**4.3**	**6.1**	**3.2**	**4.7**	**8.1**	**3.7**	**4.1**	**5.6**
.1	.1	.1	.1	.2	.2	0	0	0	.2	.2	.3	0	.2	.3	.2	.2	.3	0	0	.1
.2	.2	.4	.2	.3	.6	0	0	0	.2	.4	.7	0	.4	.4	.2	.4	.7	.2	.4	.5
1.9	2.2	4.0	1.8	2.6	4.1	1.8	1.7	1.5	2.1	2.9	5.6	1.8	2.7	4.3	2.1	2.9	5.6	2.7	2.8	3.9
.6	.6	1.0	.6	.7	1.0	.4	.5	.5	.7	1.0	1.2	.5	.8	.8	.7	1.0	1.2	.8	.8	1.0
0	0	0	0	0	.2	0	0	0	.1	.2	.3	0	.3	.3	.1	.2	.3	0	.1	.1
1.0	**1.1**	**1.6**	**.9**	**1.1**	**1.4**	**.7**	**.7**	**.7**	**1.2**	**1.2**	**1.8**	**.9**	**1.7**	**1.8**	**1.2**	**1.2**	**1.8**	**1.1**	**1.2**	**1.9**
3.7	**4.3**	**6.6**	**3.7**	**4.1**	**5.6**	**2.7**	**3.0**	**2.9**	**4.1**	**5.6**	**6.6**	**3.7**	**4.6**	**5.2**	**4.3**	**5.2**	**6.6**	**4.3**	**5.6**	**6.8**
1.6	1.7	2.6	1.7	1.7	2.3	1.2	1.3	1.2	1.7	2.3	3.1	1.7	2.0	2.3	1.7	2.3	3.1	2.1	2.5	3.1
.5	.6	.7	.5	.5	.6	.3	.4	.4	.5	.6	.7	.4	.6	.7	.5	.6	.7	.5	.7	.7
1.6	2.0	3.3	1.5	1.9	2.7	1.2	1.3	1.3	1.9	2.3	2.8	1.6	2.0	2.2	1.9	2.3	2.8	1.7	2.4	3.0
9.5	**10.7**	**17.6**	**9.6**	**11.5**	**16.9**	**6.6**	**7.4**	**7.2**	**11.2**	**14.5**	**20.9**	**8.9**	**14.2**	**16.9**	**11.2**	**14.5**	**20.9**	**11.6**	**13.9**	**18.7**
.3	**.4**	**1.2**	**.3**	**.5**	**1.2**	**0**	**0**	**0**	**.4**	**.7**	**1.5**	**.3**	**.6**	**1.4**	**.4**	**.7**	**1.5**	**.3**	**.5**	**.7**
11.1	**12.7**	**20.8**	**11.2**	**13.6**	**20.2**	**7.4**	**8.4**	**8.2**	**13.2**	**17.0**	**24.7**	**10.6**	**16.7**	**20.7**	**13.2**	**17.0**	**24.7**	**13.3**	**15.9**	**21.3**

TABLE H.27--PACIFIC NORTHWEST STATION RESEARCH PROGRAM: SUMMARY BY ALTERNATIVE, 1986, 1990, and 2030 1/

INDICATOR	RECOMMENDED PROGRAM						ALTERNATIVE 1			ALTERNATIVE 2			ALTERNATIVE 3		
	Low Bound			High Bound			Constant			Market			Nonmarket		
	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
	(MILLIONS OF DOLLARS)														
WATER	1.4	1.1	1.8	1.4	1.1	1.9	1.5	1.4	1.4	1.5	2.2	2.9	1.4	1.5	2.5
WATERSHED	1.0	1.0	1.1	1.0	1.0	1.2	1.4	1.3	1.2	1.3	1.9	2.6	1.2	1.3	2.2
SOILS	0.4	0.1	0.7	0.4	0.1	0.7	.1	.1	.2	.2	.3	.3	.2	.2	.3
MINERALS	0	0.1	0.3	0	0.1	0.3	.5	.5	.6	.7	.9	1.3	.8	.9	1.4
RANGE	0.2	0.3	0.4	0.2	0.3	0.4	.5	.5	.5	.7	.9	1.1	.4	.4	.7
RECREATION	0.1	0.1	0.3	0.1	0.1	0.4	.2	.2	.2	.1	.2	.3	.2	.2	.5
FOREST RECREATION	0.1	0.1	0.3	0.1	0.1	0.4	.2	.2	.2	.1	.2	.3	.2	.2	.5
URBAN FORESTS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WILDERNESS	0	0.1	0.2	0	0.1	0.3	0	0	0	0	0	0	0	0	0
TIMBER	6.6	6.1	8.5	6.6	7.1	10.4	6.5	6.4	6.4	8.0	10.5	13.4	8.0	9.7	15.4
INVENTORY	2.4	2.1	2.3	2.4	2.1	2.8	2.1	2.1	2.1	1.9	2.6	3.4	2.3	2.4	3.7
EVALUATION	0.4	0.3	0.4	0.4	0.3	0.5	.2	.2	.2	.2	.2	.3	.3	.3	.4
BIOLOGY	2.0	1.6	2.6	2.0	2.1	3.1	2.0	2.0	2.0	2.8	3.1	3.9	2.6	3.2	5.1
GENETICS	0.5	0.6	0.8	0.5	0.8	1.0	.7	.6	.6	.6	.8	1.0	.6	.7	1.1
PRODUCTION ECONOMICS	0.4	0.5	0.7	0.4	0.6	0.9	.1	.1	.1	.4	.7	1.0	.4	.6	1.0
HARVESTING	0.2	0.3	0.5	0.2	0.4	0.7	.5	.5	.6	.8	1.2	1.3	.8	1.1	2.0
PROCESSING	0.4	0.4	0.6	0.4	0.5	0.8	.8	.8	.8	1.1	1.6	2.0	.9	1.2	1.8
MARKETING ECONOMICS	0.3	0.3	0.6	0.3	0.3	0.6	.1	.1	.1	.2	.3	.5	.1	.2	.3
WILDLIFE-FISH	2.2	2.1	3.4	2.2	2.7	3.7	1.6	1.6	1.5	1.9	2.9	3.5	1.9	2.0	2.8
PROTECTION	2.7	2.4	2.9	2.7	2.5	3.4	3.5	3.8	3.6	4.2	5.2	6.1	3.3	3.6	5.8
INSECTS	1.5	1.2	1.3	1.5	1.2	1.6	2.1	2.3	2.1	2.7	2.9	3.1	1.5	1.7	2.5
DISEASE	0.7	0.6	0.8	0.7	0.7	0.9	1.0	1.0	1.0	1.1	1.6	2.0	1.2	1.3	2.1
FIRE	0.5	0.6	0.8	0.5	0.6	0.9	.4	.5	.5	.4	.7	1.0	.6	.6	1.2
PROGRAM TOTAL	13.2	12.1	17.6	13.2	14.0	21.0	14.4	14.6	14.4	17.1	23.0	28.6	15.8	18.5	29.0
CONSTRUCTION	0.1	0.0	0.5	0.1	0.3	0.7	.3	.3	.3	.4	.9	1.9	.5	.6	1.9
TOTAL RESEARCH	14.9	13.9	20.1	14.8	16.2	23.9	16.8	17.0	16.8	19.7	26.7	33.7	18.4	21.6	34.1

* Less than $50,000.

1/Totals include some Administrative Costs not shown in the body of the table.

ALTERNATIVE 3A High Wilderness			ALTERNATIVE 4 All Resources			ALTERNATIVE 5 Reduced			ALTERNATIVE 6 Implement Plans			ALTERNATIVE 7 High PNV			ALTERNATIVE 8 1980 RPA			ALTERNATIVE 9 High Productivity		
1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030	1986	1990	2030
(MILLIONS OF DOLLARS)																				
1.4	**1.5**	**2.5**	**1.5**	**1.7**	**2.8**	**1.3**	**1.2**	**1.2**	**1.7**	**2.2**	**3.6**	**1.4**	**1.3**	**1.3**	**1.7**	**2.2**	**3.6**	**1.5**	**1.7**	**1.9**
1.2	1.3	2.2	1.3	1.5	2.5	1.1	1.1	1.1	1.5	1.9	3.2	1.2	1.0	1.0	1.5	1.9	3.2	1.3	1.5	1.7
.2	.2	.3	.2	.2	.3	.2	.1	.1	.2	.3	.4	.2	.3	.3	.2	.3	.4	.2	.2	.2
.8	**.9**	**1.4**	**.7**	**.8**	**1.2**	**.5**	**.6**	**.6**	**.8**	**1.0**	**1.4**	**.9**	**.7**	**.8**	**.8**	**1.0**	**1.4**	**.7**	**.6**	**.6**
.4	**.4**	**.7**	**.6**	**.8**	**1.2**	**.4**	**.4**	**.4**	**.6**	**.9**	**1.3**	**.3**	**.4**	**.7**	**.6**	**.9**	**1.3**	**.7**	**1.0**	**1.2**
.2	**.2**	**.5**	**.4**	**.5**	**.7**	**.2**	**.2**	**.2**	**.5**	**.6**	**.7**	**0**	**0**	**0**	**.5**	**.6**	**.7**	**.2**	**.2**	**.2**
.2	.2	.5	.4	.5	.7	.2	.2	.2	.5	.6	.7	0	0	0	.5	.6	.7	.2	.2	.2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8.0	**9.7**	**15.4**	**6.9**	**8.7**	**13.0**	**4.7**	**4.8**	**4.8**	**7.6**	**10.7**	**16.1**	**6.9**	**10.0**	**14.0**	**7.6**	**10.7**	**16.1**	**8.7**	**10.1**	**15.1**
2.3	2.4	3.7	1.6	2.1	3.2	1.7	1.7	1.7	1.8	2.7	3.9	1.7	2.5	3.4	1.8	2.7	3.9	2.2	2.4	3.0
.3	.3	.4	.3	.3	.4	.2	.2	.2	.3	.3	.5	.3	.3	.3	.3	.3	.5	.2	.2	.2
2.6	3.2	5.1	2.2	2.8	4.2	1.4	1.5	1.5	2.5	3.5	5.1	2.1	3.2	4.4	2.5	3.5	5.1	3.5	4.2	6.6
.6	.7	1.1	.5	.6	.9	.4	.4	.4	.6	.8	1.1	.6	.8	1.1	.6	.8	1.1	.6	.5	.5
.4	.6	1.0	.4	.5	.7	.1	.1	.1	.4	.6	.9	.5	.7	1.1	.4	.6	.9	.2	.4	.9
.8	1.1	2.0	.8	1.0	1.5	.3	.3	.3	.8	1.1	2.0	.6	.8	1.3	.8	1.1	2.0	.7	.9	1.4
.9	1.2	1.8	.9	1.2	1.8	.5	.5	.5	1.0	1.5	2.2	1.0	1.0	1.6	1.0	1.5	2.2	1.0	1.1	1.6
.1	.2	.3	.2	.2	.3	.1	.1	.1	.2	.2	.4	.1	.7	.8	.2	.2	.4	.3	.4	.9
1.9	**2.0**	**2.8**	**1.9**	**2.3**	**3.2**	**1.5**	**1.4**	**1.4**	**2.0**	**2.9**	**3.9**	**2.1**	**3.1**	**4.5**	**2.0**	**2.9**	**3.9**	**1.9**	**2.3**	**2.3**
3.3	**3.6**	**5.8**	**3.7**	**4.4**	**6.7**	**2.3**	**2.3**	**2.3**	**4.0**	**5.8**	**8.7**	**4.3**	**7.2**	**8.9**	**4.0**	**5.8**	**8.7**	**4.0**	**3.9**	**5.1**
1.5	1.7	2.5	1.9	2.1	3.2	1.5	1.5	1.5	2.0	3.0	4.2	2.2	3.9	4.7	2.0	3.0	4.2	2.6	2.3	2.3
1.2	1.3	2.1	1.1	1.4	2.2	.4	.4	.4	1.3	1.7	2.8	1.3	2.0	2.2	1.3	1.7	2.8	.8	.9	1.5
.6	.6	1.2	.7	.9	1.3	.4	.4	.4	.7	1.1	1.7	.8	1.3	2.0	.7	1.1	1.7	.6	.7	1.3
15.8	**18.5**	**29.0**	**15.6**	**19.3**	**28.8**	**11.0**	**10.9**	**10.8**	**17.2**	**24.3**	**35.8**	**15.9**	**22.7**	**30.3**	**17.2**	**24.3**	**35.8**	**17.6**	**19.9**	**26.4**
.5	**.6**	**1.9**	**.4**	**.7**	**1.9**	**.1**	**.1**	**.1**	**.5**	**1.0**	**2.3**	**.4**	**.9**	**2.0**	**.5**	**1.0**	**2.3**	**.4**	**.6**	**1.0**
18.4	**21.6**	**34.1**	**18.3**	**22.6**	**34.0**	**12.7**	**12.5**	**12.5**	**20.1**	**28.2**	**41.7**	**18.5**	**26.4**	**34.4**	**20.1**	**28.2**	**41.7**	**20.1**	**22.9**	**30.3**

Appendix I: Research Program Development

Forest resources such as timber, minerals, water, wildlife, range, recreation and wilderness represent a major national asset. Our Nation requires a reliable supply of forestry products and services now and in the foreseeable future. Forest Service Research has demonstrated the ability to develop technology to efficiently produce new goods and services.

Technologies age and become obsolete. The historic policy of providing public support for forestry research underlies the ability of U.S. producers to compete in world markets, to provide American consumers with high quality, reasonably priced forest products, and opportunities to pursue quality recreation experiences. However, past research achievements will not automatically assure continued growth in resource productivity and international competitiveness. Significant changes are also underway in related sciences that require new and updated forest technology.

Forest Research Planning

USDA Forest Service research priorities were developed in coordination with others established by forestry and agriculture planning committees and organizations, as well as individual suggestions by the public. A list of reports and studies in the research development process are cited at the end of this appendix.

Four criteria were used in the research development process: (1) response to technology and information needs; (2) potential for contributions to productivity increase and other benefits; (3) relationship to historical research trends; and (4) response to national policies.

Research Needs

The need for research is generated by: the emergence of problems such as acid deposition, the development of new techniques like genetic engineering, the definition of a specific need such as improved regeneration, public and market demands for expanded production of more forest products, and legislative actions calling for changes such as maintenance of endangered animal and plant species.

There is also a growing need for research which sustains the productivity of our existing technology and information data bases. Over the last several decades considerable investments have been directed toward the development of high technology forest management systems which produce a wide variety of market and nonmarket outputs. Many of the production systems are highly dependent upon a continuous flow of new basic technology and information. There is also a need for continued basic research expertise and information to protect forest resources from new and unforeseen threats resulting from national disasters, new environmental concerns, and the potential devastation caused by major insect and disease outbreaks.

The following statements highlight conditions, problems, and opportunities, by RPA goal area, which require new technology or management information.

Air, Soil, and Water

Water availability and quality are continuing national concerns. These are critical in many areas, particularly the western United States. Since forests and rangeland watersheds provide the major supply

of the Nations water, improved water management technologies must be incorporated into timber harvesting and grazing activities. Improved technologies are required to:

Identify practical methods for improving water yield in water-scarce regions.

Minimize water pollution from forest and range management practices.

Acid deposition research involves assessing interactive air, soil, and water conditions to determine the potential effects of air pollution and changes in ozone levels. Research is needed to determine:

Mechanisms which may cause acid deposition.

Technology which can specifically measure air pollutants harmful to forest resources.

Minerals

There is a critical need to futher alleviate the impacts of past and present mining practices on forest and associated range lands.

The use of coal and other mineral resources is increasing. To rehabilitate mining sites and reduce off-site damage requires new or altered plant species and affordable pollution control practices.

Range

Forests and rangelands cover major areas of the United States, and have the potential for contributing much more to the economic and social well-being of the Nation.

Greater productivity of range resources is needed and can be realized through genetic improvement of range plants, broader understanding of range ecology, improved grazing management systems, and development of environmentally safe noxious weed control technology.

Recreation

Forest recreation is an important component of leisure; the money spent for outdoor recreation contributes to almost every sector of the Nation's economy. A mobile and growing population will create major shifts in demands for outdoor recreation. Reconciling competing demands on forest resources will be a major component of the recreation research program.

Research is needed to determine recreation demand, to interpret the impact of the demands on other resource uses, and to develop improved management techniques for urban forest and wildland recreational benefits.

Research is needed to develop management systems that ensure fulfillment of short-run demands for recreation and related amenity values, while ensuring long-run resource productivity.

Wilderness

Recreational use of wilderness must be kept at low-impact levels if unmodified natural conditions are to be protected and opportunities for solitude maintained.

Information and analysis is needed on how to best manage wilderness recreation while preserving its other attributes.

Timber

The efficiency of growing, harvesting, processing, and marketing timber products must be enhanced while satisfying other multiple-use potentials of the forest ecosystem.

Forest scientists understand and can modify the processes in living cells to enhance activities most beneficial to man. This can hasten the development of superior trees, find more beneficial uses for pulp-waste products, and provide the capability for more complete use of wood products.

Changing domestic and international markets for wood products requires a continuing analysis of issues such as domestic and international timber supply-and-demand trends, trade barriers, exchange rates, comparative costs, price trends, and government policies.

Modern timber production and processing depends heavily on chemicals. The challenge is to develop chemical systems and management alternatives to enhance their beneficial consequences and reduce environmental hazards.

Better utilization technologies are needed to extend the supply of scarce softwoods, increase the profitability of using our abundant hardwood species, and reduce the cost of utilizing small or low-quality trees.

Wildlife and Fish

Wildlife and fish habitats will continue to be threatened by urban and suburban development pressures and industrial activities, timber harvesting, livestock grazing, and mining for energy production.

Research is needed to futher understand habitat requirements of anadromous and other cold-water fish, determine how their productivity is related to land management, and develop guidelines to integrate production with other resource management and use.

Improved wildlife monitoring techniques are needed to measure the response to management.

Protection

Insects, diseases, and wildfire each year destroy an estimated 2.4 billion cubic feet of timber--an amount equal to one-fifth the annual harvest. Additionally, these destructive agents inhibit annual growth by about the same amount.

Continuing research is needed on integrated pest management systems. These systems should include a combination of biological control agents, safe chemicals, and improved management practices.

Continued fire research efforts are required to focus on: (1) economical prevention and control of undesirable fires; and (2) the improvement of fuel (vegetation) management techniques, including effects on air quality.

Solid scientific documentation is needed on the effects of acid deposition on soil fertility, nutrient cycling, tree growth rates, water quality for and fish and wildlife habitats.

Contributions to Productivity

The capacity to develop and manage technology consistent with a nation's physical and cultural endowments is the most important variable accounting for differences in agricultural and forest productivity among nations (Ruttan, 1982). Increases in productivity due to the application of new technology from research are well documented (Fishel and Ledermand, 1971). The significance of knowing about and implementing technological change is that it increases profits either by reducing costs or increasing returns. Expectations of increased profits stiumulate increases in productivity and efficiency of resource use. Producers and consumers both benefit when natural resources are more efficiently utilized.

More than 70 percent of the Nation's softwood production is accounted for by Douglas-fir, ponderosa pine and loblolly pine. The mean annual growth in cubic feet/acre is currently estimated at 75, 26, and 75, respectively. Emerging technology in improved silvicultural practices--genetically improved trees, vegetation control, reforestation, thinning, drainage, and fertilization--has the potential of increasing per-acre growth of these species two to three times. Improved knowledge about these practices is a key factor in this growth potential. Unless that knowledge is implemented to increase growth, U.S. consumers will be paying more for wood products and competing materials in the future.

Farnum et. al. (1983) also estimate that implementing research findings in silvicultural and genetic manipulation of Douglas-fir and loblolly pine plantations can significantly increase productivity over natural forests. In addition, further research, especially in biotechnology, will allow raising actual productivity more than the potential currently achievable.

The benefits of forest utilization research, including research by the Forest Service, universities, and industry, have been substantial. A study by Gregersen, et al. (1983) focused on reductions in softwood timber consumption due to improvements in research-created technology. They found the internal rate of return to research investments during 1972-1981 to be about 18 percent above inflation. Bengston (1983) estimated the internal rate of return to structural particleboard research to be about 20 percent. The application of research-developed technology in the sawmilling industry has been estimated to potentially save consumers nearly $150 million annually (Risbrudt and Kaiser, 1982.)

To evaluate potential outputs from research at alternative RPA funding levels, a case study (Row, 1984) was conducted. It covered six research problem areas that contribute strongly to physical outputs (as compared with research that prevents or mitigates environmental damage): biology, genetics, timber harvesting, timber processing, range, and protection from insects. An analysis of potential impacts from selected research projects in these disciplines indicates that complete implementation of research will add significantly to forest outputs by 2030.

Furthermore, Row's analysis indicated that cost savings, primarily from implementation of research in forest products processing, could range from $200 million to $380 million per year by 2010--depending on the RPA alternative selected. This cost savings could increase to a range from $300 million to $790 million per year by 2030.

Historical Research Trends

Technological development in all major fields of science is expanding rapidly. As we advance from the industrial period, and enter the science and information age, biological technologies, including those in forestry, need updating. This requires increased research investments from both the Federal and private sectors and coordination of these investments so that the new forest tehnologies are available to meet the needs of this new era.

In view of recent trade deficits, United States funding for Research and Development (R&D) is of growing concern, especially for such basic industries as forestry. A recent report in Research Management authored by U.S. Representative Ed Zschau states:

> United States technological leadership has eroded in recent years. It hasn't been squandered like some other resources through overuse and waste. It's been frittered away through neglect.
>
> Over the past 20 years R&D expenditures as a percent of GNP have declined in the U.S. During the same period, our two most aggressive trading partners--Japan and West Germany --were increasing these expenditures. In the 1950's the U.S. was credited with 80 percent of the major inventions made during that period. During the 1970's our share of major inventions dropped to 60 percent (Zschau, 1984).

Long-term, relatively fixed, or declining Forest Service Research funding levels during a period of record high inflation have had an adverse influence on professional staffing. The total number of scientists has declined. Few new scientists have been hired since the mid-1970s. Much of the new fundamental research on biotechnology, systems analysis, and information science cannot be fully applied to key forestry problems and opportunities because the Forest Service has been unable to recruit adequate numbers of professionals trained in these new areas.

Research Response to National Policies

Secretary of Agriculture John R. Block established five goals for the USDA during his tenure. One of these goals is "maintain agricultural capacity through research and extension" (USDA, 1982).

Specific direction for science in the USDA, summarizing both OMB and Congressional policy, was provided in an official policy paper released by the Secretary's Office of Science and Education on March 22, 1982. This statement said in part:

> The Federal government currently gives priority to scientific activities that (1) bolster national security and (2) contribute to the economic stability of the United States. However, support of fundamental research is recognized as essential--without it applied research will eventually dry up from lack of substance, and a flagging technology is not in the national interest.
>
> Both the Administration and Congress stress the following as appropriate Federal agricultural research responsibilities:
>
> a. Fundamental approaches that are beyond the risk-taking capacity of the private sector.
>
> b. Areas needing systems approaches, high-cost integrated multidisciplinary approaches, or mega-problems (national/global scope) which are beyond the capability of other sectors.
>
> c. Programs that other areas will not address or which cannot be equally or better accomplished elsewhere. This particularly relates to industry capability and responsibility.

d. Programs which because of their high cost, high priority, or regional, national, or global scale require government management and leadership but do not preclude participation by other sectors.

e. Programs mandated by Congress.

f. Programs required by USDA, such as technical and educational support for action agencies (USDA, 1982).

These policy statements indicate that high priority Forest Service Research should be continued, with focus on new research in: biotechnology and other more fundamental research, improved information and analytical systems for analysis of domestic and international timber supply-and-demand trends, and other research requiring major integrated multidisciplinary efforts of national or international scope. Research aimed at improving the economic efficiency of forest resource management is a major emphasis throughout the Program. Increased emphasis on major national and international environmental concerns, such as acid deposition and water quality and yield can also be anticipated. Finally, research in vital forest resource protection areas will be continued to provide basic knowledge and technology for combatting continued threats from fire, insects, and disease.

Special Research Studies

Two special studies were conducted to provide information for making decisions about the 1985 RPA Program. The first study developed preliminary research priorities for all research problem areas (Shafer and Davis, 1983). The study evaluated benefits and investment levels by problem area. A total of 19 problem areas were evaluated and are shown in most research tables in this document. The 19 problem areas are the same as those used by Forest Service Research in joint planning efforts with the Nation's forestry schools--as required by Title XIV of the Food and Agriculture Act of 1981. The second study was an economic case study analysis which developed estimates of potential cost savings, increased outputs, and other benefits from research (Row, 1984). Estimates of research impacts were based on the composite expectation of many scientists and assumed continuation of research success at average rates experienced in the recent past. This analysis was primarily directed toward selected research problems in product and process research.

Forest Service research priorities for the RPA alternatives were developed through an extensive review of specific needs and required funding levels by field and WO Research, NFS, and S&PF staffs.

Integration with Land Management Planning Needs

During the research planning process, each Station contacted NFS and S&PF staffs within its territory. The objective was to relate Station programs in each RPA alternative to NFS land mangement objectives and needs--as spelled out in each Region's Regional Guide. The Forest Products Laboratory (FPL) met with NFS staffs in the Washington Office to determine how FPL's national long-range programs could support national planning objectives. Specifically, land management planning teams in each Region were asked the question: for each specific research problem within each alternative, is it (1) unrelated, (2) slightly needed, or (3) strongly needed to meet the objectives of alternatives in the Regional Guides? As a result of these surveys, research priorities were changed to more effectively meet land management planning needs.

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Ruttan, Vernon W. Agricultural Research Policy. University of Minnesota Press. Minneapolis. 369 pp. 1982.

Shafer, E.L., and James B. Davis. USDA Forest Service Research Program: 1985-2030--Summary of Benefits and Costs. USDA Forest Service. Washington, D.C. Unpublished. 1983.

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Appendix J:

International Forestry

The U.S. Department of Agriculture (USDA), Forest Service is composed of a wide variety of scientists, resource specialists, and resource managers. Some of them are already participating in forestry programs with other countries, but the level of participation could be expanded considerably given the needs, size, and expertise of the agency.

International forestry has not been recognized in previous planning efforts as a separate, major program of the Forest Service. Early Forest Service participation in international forestry was largely one of responding, where possible, to requests for short-term assistance or cooperation. And while this has changed somewhat in recent years, the Forest Service, for the most part, still lacks authority to initiate overseas programs, except as specifically provided for Research.

The Forest Service contracted with the Society of American Foresters (SAF) in 1983 to help prepare the program options for international forestry for the 1985 RPA Program.[1] The SAF has reviewed the current situation of the world's forest resources, world timber trade, problems in the tropical forests, and the current activities of major agencies and organizations in international forestry. This review served as a special background and assessment for developing alternative international forestry programs for the Forest Service.

The administration of all USDA international programs is coordinated through the Office of International Cooperation and Development. Four main agencies in USDA are active in international natural resources--the Forest Service, Soil Conservation Service, Foreign Agriculture Service, and Agriculture Research Service. These four agencies have offices in Washington, D.C. that conduct liaison work; arrange visits and study tours; organize workshops; lend personnel to the Agency for International Development (AID), Food and Agricultural Organization (FAO), the Peace Corps and other international agencies; and develop intergovernmental programs.

The Forest Service has leadership in international forestry programs for USDA and a major voice in the forestry programs of other departments. These programs are carried out through eight regional Experiment Stations, nine Forest Service Regions, one State and Private Forestry Area, and the U.S. Forest Products Laboratory. Two special institutes have been established to carry out research on tropical forest Laboratory problems--the Institute of Tropical Forestry in Puerto Rico and the Institute of Pacific Islands Forestry in Hawaii. The Caribbean National Forest and its staff in Puerto Rico, and special units of State and Private Forestry in Puerto Rico and Hawaii, also provide technical assistance and training on tropical forestry problems in other countries.

Research on international forestry problems is conducted in a number of ways. For example, Forest Service research on tropical forest problems is conducted mostly in research projects in Puerto Rico, Hawaii and the U.S. Forest Products Laboratory in Madison, WI. This research is usually funded by the Forest Service, but from time to time, tropical forest research may be funded by AID, FAO or some other organization. Also, considerable cooperative research is carried out with Canada and Mexico by Forest Service Experiment Stations. For example, spruce budworm research with Canada and arid land management work with Mexico.

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[1]Doolittle, Warren T. International Program for USDA Forest Service. Society of American Foresters. Washington, DC. Unpublished Report. 1983.

Another form of cooperative research is carried out under Public Law 480. Under this arrangement, U.S.-held foreign money is made available to fund research by local scientists in a recipient country in cooperation with an American scientist who has similar scientific interests. Other cooperative research may be carried out by U.S. scientists and scientists from one or more countries under a mutual arrangement whereby each scientist will fund and conduct some part of a project--the parts of which, when completed and brought together, will yield mutually beneficial results.

The Forest Service currently participates in programs where visiting foreign specialists work and train here with Forest Service specialists. This training is usually foreign financed, although the Forest Service often contributes training facilities and personnel especially on shorter term training projects. The Forest Service also furnishes technical specialists in forestry to advise and participate in forestry projects abroad. Requests for technical assistance have come from a number of organizations and countries; but currently, most requests come through AID, FAO, or agreements between the U.S. and countries no longer eligible for direct assistance. Depending on the length of assignment and the requesting organization, the specialists are either transferred to the requesting international organization or temporarily assigned, with provision for reimbursement to the Forest Service.

The Forest Service also cooperates with other Federal agencies. An agency will provide funds and the Forest Service provides people and administration of the program. A current example is the AID/FS Forestry Support Program.

Exchanges of science and technology are carried out in a number of ways. One of the most common is through participation of specialists in international conferences and workshops sponsored by other organizations such as International Union of Forestry Research Organization (IUFRO), Man and the Biosphere (MAB), and Food and Agriculture Organization of the United Nations (FAO). Visits, correspondence, literature exchange, and cooperative projects by specialists are effective ways of exchanging knowledge. Still another method of exchange is the assignment of Forest Service specialists at foreign schools, laboratories, or other forestry programs for several months or years--and, in turn, the agency reciprocates by accepting foreign specialists in appropriate Forest Service units. This program has been very helpful in the past in exposing Forest Service specialists to advanced technology found in Europe. There has also been much mutual benefit from training and technology exchanges between the U.S. and the developing countries.

International forestry activities in the Washington Office are administered by Research but National Forest Systems (NFS) and State and Private Forestry (S&PF) staffs also actively participate. Currently, Research contributes about 67 percent of the international forestry funding, NFS about 15 percent, S&PF about 15 percent, with the remainder from Forest Service administrative and legislative divisions. While Research personnel will continue to play a substantial role in international forestry, there is an increasing need in technical assistance and training programs for specialists, managers and administrators from throughout the Forest Service who have had experience in land management. Hence, the potential exists to increase the role of NFS, S&PF, and Administration, especially for NFS with its larger roster of people who have both training and experience in the management of forests and rangelands.

Appendix K:

Regional Tables

Economics, Visual Quality and Soils

Economic Effects for Region 1 By Alternative

Effects		Recommended Program Low Bound	Recommended Program High Bound	Alternatives 1	2	3	3A	4	5	6	7	8	9
PNV Total (Billion $)	1986	6.2	8.5	5.7	8.2	7.8	7.8	8.6	4.6	8.2	8.6	7.7	8.5
PNV Market (Billion $)	1986	3.7	4.3	3.6	4.9	3.3	3.3	4.9	3.4	4.4	4.6	4.3	4.6
PNV Receipts (Billion $)	1986	2.2	2.5	3.0	-0.3	2.3	0.07	2.5	3.4	2.3	2.3	2.1	2.1
Total Cost (Million $)	1986	142.3	142.3	184.9	195.1	194.6	194.6	214.9	144.2	210.9	203.9	210.4	198.7
	1990	132.2	199.1	191.0	280.5	239.3	239.3	284.1	143.6	252.5	255.6	260.5	283.5
	2030	229.5	246.8	182.5	338.4	249.1	249.1	310.5	141.9	255.5	280.2	281.8	347.9
Total Benefits (Million $)	1986	331.1	331.1	335.2	364.9	378.2	378.2	407.7	252.0	379.6	384.3	382.6	387.6
	1990	376.3	447.5	387.0	537.4	462.3	462.3	537.9	306.8	482.4	519.7	482.2	552.4
	2030	584.3	741.8	441.7	837.1	768.3	769.0	845.9	292.2	787.2	816.8	757.9	859.5
Returns to the Treasury (Million $)	1986	153.0	153.0	164.7	164.5	165.1	165.1	165.2	160.0	165.1	165.1	165.1	164.9
	1990	229.6	271.0	249.3	285.8	244.1	217.2	279.5	212.0	251.2	255.3	257.4	285.8
	2030	384.1	440.4	354.9	539.7	418.9	356.5	545.5	316.2	450.4	483.8	465.1	520.6
Returns to States (Million $)	1986	17.0	17.0	17.9	17.9	18.0	18.0	18.1	17.4	18.0	18.0	18.0	18.0
	1990	34.7	37.7	32.3	41.5	31.0	31.0	39.9	23.9	32.8	33.8	34.4	41.5
	2030	69.5	82.1	61.1	107.3	77.1	77.1	108.8	52.0	85.0	93.3	88.7	102.6
Consumer Benefit (Million $)	1986	178.1	178.1	170.5	200.4	213.1	213.1	242.5	92.0	214.4	219.2	217.5	222.7
	1990	146.7	176.4	137.7	251.6	218.1	245.1	258.4	94.8	231.2	264.4	224.8	266.6
	2030	200.2	301.4	86.8	297.4	349.4	412.5	300.5	-24.1	336.8	333.0	292.8	338.9
Income Effect (Million $)	1986	950.5	950.5	880.6	987.0	975.6	975.6	1091.8	631.9	989.1	1029.3	1006.1	987.1
	1990	1128.7	1239.8	1057.4	1605.1	1145.8	1145.8	1501.1	802.1	1307.3	1396.5	1334.1	1604.4
	2030	1614.2	2242.0	719.8	1596.4	1102.1	1102.1	1502.5	432.3	1257.8	1311.8	1277.5	1706.8
Employment (Thousand Jobs)	1986	37.7	37.7	36.1	40.6	39.8	39.8	47.3	24.5	40.2	41.8	40.9	40.6
	1990	37.4	43.1	38.9	61.3	43.4	43.4	58.4	26.7	47.1	50.0	47.4	61.2
	2030	49.2	72.8	34.5	80.2	55.2	55.2	75.5	21.7	61.4	63.4	61.7	85.2

Economic Effects for Region 2 By Alternative

Effects		Recommended Program Low Bound	Recommended Program High Bound	Alternatives 1	2	3	3A	4	5	6	7	8	9
PNV Total (Billion $)	1986	9.7	12.7	8.9	11.3	13.5	13.4	12.1	7.8	12.8	13.3	12.3	12.6
PNV Market (Billion $)	1986	2.5	3.0	3.4	3.4	2.5	2.5	2.9	2.9	3.1	3.1	2.9	3.1
PNV Receipts (Billion $)	1986	-1.0	-1.0	-0.7	-1.3	-1.2	-1.5	-1.4	-0.3	-1.3	-1.1	-1.4	-1.9
Total Cost (Million $)	1986	79.8	79.8	89.3	105.4	103.4	103.4	110.0	78.3	106.3	99.7	108.0	112.0
	1990	75.2	112.9	88.0	118.1	112.4	112.4	124.8	64.8	119.2	108.2	121.7	129.7
	2030	134.6	141.2	87.9	143.2	124.2	124.5	143.9	62.7	135.6	118.8	132.6	166.4
Total Benefits (Million $)	1986	302.5	302.5	367.0	380.1	412.9	412.9	396.8	352.4	398.2	400.7	400.3	388.7
	1990	403.2	479.5	402.9	462.0	517.1	517.1	488.0	372.1	494.5	504.0	490.6	488.8
	2030	963.8	1223.6	749.2	1081.5	1288.4	1259.9	1178.7	547.3	1226.4	1268.4	1175.0	1306.7
Returns to the Treasury (Million $)	1986	37.0	37.0	42.9	43.0	43.6	43.6	43.5	42.6	43.5	43.5	43.5	43.0
	1990	46.5	53.8	50.4	57.7	50.6	45.4	58.3	46.7	53.8	53.0	53.0	52.3
	2030	92.5	104.8	84.1	100.7	92.2	64.1	98.3	76.9	97.6	94.9	89.0	74.4
Returns to States (Million $)	1986	5.1	5.1	6.2	6.2	6.4	6.4	6.4	6.2	6.4	6.3	6.4	6.2
	1990	7.2	7.6	6.7	8.5	6.8	6.8	8.7	5.8	7.6	7.4	7.4	8.5
	2030	11.2	13.6	8.6	12.7	10.6	10.6	12.1	6.9	12.0	11.3	10.3	13.2
Consumer Benefit (Million $)	1986	265.4	265.4	324.1	337.0	369.3	369.3	353.3	309.8	354.6	357.2	356.8	345.7
	1990	356.7	425.7	352.5	404.2	466.5	471.8	429.7	325.4	440.7	451.0	437.5	436.4
	2030	871.3	1118.8	665.1	980.8	1196.1	1195.7	1080.4	470.4	1128.7	1173.5	1085.9	1232.3
Income Effect (Million $)	1986	380.7	380.7	181.4	197.0	118.7	188.7	208.9	177.0	189.8	188.6	192.1	198.0
	1990	388.1	502.4	190.8	229.7	210.1	210.1	247.7	173.5	223.5	221.0	227.5	223.4
	2030	750.8	882.6	188.7	360.6	373.9	373.9	368.3	165.0	354.5	364.4	349.6	414.4
Employment (Thousand Jobs)	1986	21.0	21.0	10.9	11.8	11.3	11.3	12.5	10.6	11.3	11.3	11.5	11.8
	1990	21.5	27.8	11.5	13.8	12.6	12.6	14.9	10.5	13.4	13.3	13.6	13.3
	2030	42.7	50.2	11.3	21.9	22.9	22.9	22.4	10.0	21.6	22.3	21.3	25.2

Economic Effects for Region 3 By Alternative

Effects		Recommended Program		Alternatives									
		Low Bound	High Bound	1	2	3	3A	4	5	6	7	8	9
PNV Total (Billion $)	1986	6.3	8.4	4.8	6.1	8.5	8.4	7.8	4.3	6.5	8.1	6.8	7.6
PNV Market (Billion $)	1986	0.9	1.1	1.4	1.0	0.8	0.8	1.1	1.0	0.9	0.7	0.8	0.8
PNV Receipts (Billion $)	1986	-1.0	-1.1	-0.7	-1.5	-1.5	-1.6	-1.4	-0.6	-1.5	-1.4	-1.6	-1.7
Total Cost (Million $)	1986	92.0	92.0	107.7	125.4	117.2	117.2	123.5	102.7	119.4	120.9	120.8	125.9
	1990	86.9	129.7	108.4	147.3	133.5	133.5	152.2	80.7	143.1	146.5	148.2	154.0
	2030	150.6	159.7	109.8	174.2	156.4	158.0	176.9	79.1	171.5	165.2	168.6	195.4
Total Benefits (Million $)	1986	252.3	252.3	285.4	302.7	305.3	305.3	310.9	283.0	288.7	307.6	291.6	319.1
	1990	339.5	394.8	289.0	335.3	380.8	380.8	382.7	260.5	318.1	393.2	334.3	382.8
	2030	673.8	855.4	451.7	734.6	935.0	932.5	869.2	343.5	808.4	898.9	848.0	893.3
Returns to the Treasury (Million $)	1986	42.4	42.4	49.3	49.3	49.3	49.3	49.3	49.2	49.3	49.3	49.3	49.2
	1990	75.6	82.5	72.2	85.8	71.8	70.7	80.3	70.0	74.5	75.3	74.4	85.5
	2030	111.7	131.6	128.1	136.1	109.9	104.9	132.8	85.3	123.8	136.9	124.5	142.3
Returns to States (Million $)	1986	9.7	9.7	11.3	11.4	11.3	11.3	11.4	11.3	11.3	11.3	11.4	11.3
	1990	17.9	19.4	16.8	20.2	16.7	16.7	18.8	16.2	17.4	17.6	17.3	20.1
	2030	25.8	30.6	29.8	31.8	25.2	25.2	31.0	19.1	28.7	32.0	28.9	33.3
Consumer Benefit (Million $)	1986	209.9	209.9	236.2	253.3	256.0	256.0	261.6	233.8	239.4	258.3	242.3	269.8
	1990	263.9	312.3	216.8	249.5	309.0	310.2	302.5	190.5	243.6	317.8	259.9	297.3
	2030	562.1	723.8	323.6	598.5	825.1	827.6	736.4	258.2	684.6	762.0	723.5	751.0
Income Effect (Million $)	1986	631.0	631.0	733.0	787.0	753.0	753.0	767.0	728.0	751.0	752.0	677.0	787.0
	1990	737.0	737.0	732.0	890.0	826.0	826.0	767.0	649.0	815.0	891.0	884.0	890.0
	2030	1231	1335.0	726.0	1245.0	1265.0	1218.0	1327.0	598.0	1212.0	1323.0	1309.0	1376.0
Employment (Thousand Jobs)	1986	23.7	23.7	27.5	29.4	28.2	28.2	28.8	27.3	28.1	28.2	28.8	29.4
	1990	20.4	20.4	27.5	33.3	31.2	31.2	33.7	24.6	30.5	33.4	33.2	33.3
	2030	47.1	54.1	27.3	47.6	48.8	46.6	50.8	22.7	46.3	51.8	50.2	52.8

Economic Effects for Region 4 By Alternative

Effects		Low Bound	High Bound	Alternatives 1	2	3	3A	4	5	6	7	8	9
PNV Total (Billion $)	1986	6.8	9.0	6.3	8.0	9.5	9.5	8.9	5.6	7.5	8.5	7.3	9.3
PNV Market (Billion $)	1986	0.3	0.4	1.2	1.0	0.3	0.3	0.8	1.2	0.2	0.6	-0.09	0.8
PNV Receipts (Billion $)	1986	2.0	-2.3	-1.7	-2.7	-2.6	-2.6	-2.6	-1.2	-2.9	-2.3	-3.1	-3.0
Total Cost (Million $)	1986	99.2	99.2	113.6	128.4	125.0	125.0	128.7	81.5	128.3	119.8	128.1	126.0
	1990	87.8	135.2	113.5	163.7	146.6	146.6	165.2	80.6	171.0	133.7	160.7	168.7
	2030	178.0	188.8	113.7	205.0	165.8	166.3	182.0	81.6	189.5	146.1	198.8	229.6
Total Benefits (Million $)	1986	343.7	343.7	358.6	376.0	379.4	379.4	378.6	322.1	366.4	367.8	367.2	385.7
	1990	386.7	459.8	370.2	447.5	478.8	478.8	460.2	328.5	427.6	447.8	421.5	486.4
	2030	635.1	806.3	503.6	786.8	896.6	901.0	900.0	397.2	797.5	779.3	789.6	968.9
Returns to the Treasury (Million $)	1986	22.1	22.1	26.5	26.9	26.5	26.5	26.5	26.1	26.5	26.5	26.5	26.9
	1990	39.6	42.5	31.8	40.1	31.7	31.5	39.9	23.4	38.0	31.8	38.9	38.5
	2030	60.0	71.6	45.5	89.9	43.5	42.2	76.0	39.1	58.9	41.2	59.0	93.9
Returns to States (Million $)	1986	5.4	5.4	6.5	6.6	6.5	6.5	6.5	6.4	6.5	6.5	6.5	6.6
	1990	9.7	10.3	7.7	9.8	7.7	7.7	9.7	5.6	9.2	7.7	9.5	9.4
	2030	14.3	17.2	10.7	21.8	10.2	10.2	18.4	9.1	14.0	9.7	14.2	22.8
Consumer Benefit (Million $)	1986	321.6	321.6	332.1	349.2	352.9	352.9	352.1	296.0	339.9	341.3	340.7	358.8
	1990	347.1	417.4	338.4	407.4	447.0	447.3	420.3	305.1	389.6	416.0	382.6	447.9
	2030	575.0	734.6	458.1	697.0	853.1	858.8	823.7	358.1	738.5	738.2	730.5	875.0
Income Effect (Million $)	1986	486.8	487.2	486.8	561.9	569.6	569.6	520.2	425.8	623.1	623.1	520.3	495.6
	1990	487.3	750.8	487.3	469.5	599.1	599.1	479.5	423.4	750.8	516.7	536.2	484.9
	2030	715.8	957.6	481.2	616.8	878.9	878.9	668.5	401.5	957.6	676.7	720.5	607.1
Employment (Thousand Jobs)	1986	24.1	24.1	24.1	25.9	29.1	29.1	24.5	21.3	24.0	24.0	25.8	24.1
	1990	24.1	25.5	24.2	22.6	30.6	30.6	23.2	21.2	25.5	25.3	26.7	23.0
	2030	29.3	32.6	24.2	27.9	45.4	45.4	31.1	20.0	32.6	32.6	26.2	26.9

Economic Effects for Region 5 By Alternative

Effects		Recommended Program		Alternatives									
		Low Bound	High Bound	1	2	3	3A	4	5	6	7	8	9
PNV Total (Billion $)	1986	14.5	19.4	8.8	13.8	16.4	16.5	15.5	8.7	15.0	18.0	14.9	17.0
PNV Market (Billion $)	1986	0.7	0.9	-0.6	0.8	-1.6	-1.7	-0.5	1.3	-0.1	1.5	0.2	0.5
PNV Receipts (Billion $)	1986	-1.8	-1.9	-0.8	-2.6	-2.8	-2.9	-2.8	0.5	-2.3	-1.7	-2.3	-3.6
Total Cost (Million $)	1986	224.0	224.0	307.4	384.9	348.4	348.4	381.8	259.6	357.7	357.9	368.5	393.3
	1990	212.9	317.2	309.0	423.6	361.7	361.7	432.1	258.5	379.8	376.7	392.2	442.5
	2030	404.7	435.2	286.3	438.3	387.8	388.7	429.4	247.8	407.1	400.6	420.9	475.4
Total Benefits (Million $)	1986	612.0	612.0	627.8	703.0	725.5	725.5	746.2	568.8	719.7	762.9	710.5	735.2
	1990	750.9	901.9	619.4	806.8	804.6	804.6	862.2	566.3	760.9	880.2	776.6	876.8
	2030	1573.0	1997.1	974.9	1689.2	2050.4	2060.3	1926.7	932.5	1843.1	2087.4	1799.2	2155.6
Returns to the Treasury (Million $)	1986	205.3	205.3	218.6	220.0	218.7	219.2	219.8	217.5	219.3	220.3	219.9	219.8
	1990	219.4	239.1	238.1	250.2	204.3	204.3	254.6	241.1	259.8	248.6	264.0	242.0
	2030	379.7	445.2	421.2	431.0	398.7	390.5	437.2	455.9	446.2	495.8	485.3	435.8
Returns to States (Million $)	1986	50.7	50.7	54.1	54.2	54.1	54.1	54.2	53.9	54.2	54.2	54.2	54.1
	1990	53.4	57.9	57.9	59.6	49.6	49.7	61.3	58.9	63.1	59.2	63.5	57.5
	2030	87.3	103.3	99.5	97.5	94.2	94.2	99.9	108.4	103.6	113.8	111.9	98.7
Consumer Benefit (Million $)	1986	406.8	406.8	409.2	483.0	506.8	506.3	526.4	351.3	500.4	542.6	490.6	515.4
	1990	531.5	662.8	381.3	556.6	600.3	600.3	607.6	325.2	501.1	631.7	512.7	634.8
	2030	1193.3	1551.9	553.7	1258.2	1651.7	1669.8	1489.5	476.7	1396.9	1591.6	1313.9	1719.8
Income Effect (Million $)	1986	1000.0	1000.0	1050.0	1300.0	1070.0	1070.0	1240.0	900.0	1200.0	1230.0	1240.0	1270.0
	1990	1080.0	1250.0	1050.0	1560.0	1140.0	1140.0	1470.0	900.0	1320.0	1380.0	1390.0	1630.0
	2030	1920.0	2210.0	1050.0	2070.0	1520.0	1520.0	1780.0	920.0	1800.0	2070.0	1830.0	2290.0
Employment (Thousand Jobs)	1986	48.0	48.0	50.0	62.0	51.0	51.0	59.0	43.0	57.0	58.0	59.0	60.0
	1990	51.0	59.0	50.0	74.0	54.0	54.0	70.0	43.0	63.0	66.0	66.0	78.0
	2030	92.0	105.0	50.0	99.0	72.0	72.0	85.0	44.0	86.0	99.0	87.0	109.0

Economic Effects for Region 6 By Alternative

Effects		Recommended Program Low Bound	Recommended Program High Bound	Alternatives 1	2	3	3A	4	5	6	7	8	9
PNV Total (Billion $)	1986	13.2	17.2	18.8	17.2	20.5	21.3	18.9	15.9	20.3	21.3	20.6	18.2
PNV Market (Billion $)	1986	8.4	9.3	12.3	9.3	11.7	11.5	11.3	10.7	11.9	12.4	12.3	8.0
PNV Receipts (Billion $)	1986	7.8	8.9	10.6	6.9	8.9	8.8	8.3	9.7	9.2	9.4	9.4	5.4
Total Cost (Million $)	1986	286.8	286.8	497.3	557.4	486.0	483.0	530.3	357.2	545.0	548.5	557.0	555.4
	1990	278.1	473.5	510.0	563.1	495.7	491.5	552.1	353.6	558.3	566.1	573.5	581.5
	2030	529.1	558.6	459.3	511.5	488.5	483.8	482.6	345.1	497.6	512.5	511.7	554.4
Total Benefits (Million $)	1986	994.0	994.0	1190.9	1118.8	1152.8	1168.6	1223.7	931.9	1220.4	1235.0	1240.5	1249.7
	1990	819.3	974.3	1163.4	1145.3	1172.0	1194.8	1245.9	917.8	1215.4	1242.7	1240.2	1191.1
	2030	1549.8	1967.6	2100.9	1790.9	2235.8	2296.0	1882.9	1682.9	2280.2	2352.4	2255.3	2136.3
Returns to the Treasury (Million $)	1986	645.1	645.1	682.6	682.8	682.5	682.8	682.6	681.6	682.7	682.9	682.9	682.9
	1990	735.4	800.3	927.9	842.7	878.6	870.3	957.5	728.0	950.8	949.0	967.8	937.3
	2030	1110.8	1311.4	1644.6	1088.2	1402.4	1383.0	1190.3	1263.6	1491.3	1504.6	1483.5	1159.0
Returns to States (Million $)	1986	161.2	161.2	170.6	170.6	170.6	170.6	170.6	170.4	170.6	170.7	170.7	170.7
	1990	183.8	200.0	231.9	210.6	219.6	217.5	239.3	181.9	237.6	237.2	241.8	234.2
	2030	277.5	327.7	411.0	271.9	350.4	345.7	297.4	315.8	372.7	376.0	370.7	289.6
Consumer Benefit (Million $)	1986	348.9	348.9	508.3	435.9	470.3	485.8	541.1	250.3	537.7	552.1	557.6	566.7
	1990	84.9	174.0	235.5	302.6	293.4	324.5	288.4	189.9	246.6	293.6	272.4	253.8
	2030	439.0	656.2	456.3	702.8	833.4	913.0	692.6	419.3	788.9	847.8	771.8	977.3
Income Effect (Million $)	1986	1719.0	1719.0	2035.0	2216.0	1854.0	1854.0	2105.0	1386.0	2099.0	2216.0	2216.0	2216.0
	1990	1725.0	1822.0	2058.0	2278.0	1971.0	1971.0	2184.0	1410.0	2183.0	2278.0	2278.0	2350.0
	2030	2983.1	2133.0	2276.0	2599.0	2251.0	2251.0	2366.0	1706.0	2627.0	2599.0	2599.0	2480.0
Employment (Thousand Jobs)	1986	146.8	146.8	173.8	188.7	171.8	171.8	179.2	120.4	179.5	188.7	188.7	188.7
	1990	150.1	156.3	176.4	193.5	171.8	171.8	186.5	123.6	187.4	193.5	193.5	193.5
	2030	203.7	207.7	202.9	232.9	205.4	205.4	208.7	156.8	237.5	232.9	232.9	210.0

Economic Effects for Region 8 By Alternative

Effects		Recommended Program		Alternatives									
		Low Bound	High Bound	1	2	3	3A	4	5	6	7	8	9
PNV Total (Billion $)	1986	10.8	14.2	7.5	11.8	15.6	15.6	14.1	5.7	12.1	15.1	12.0	14.4
PNV Market (Billion $)	1986	3.8	4.4	2.9	4.0	4.0	4.0	4.0	2.8	4.3	4.4	4.3	4.3
PNV Receipts (Billion $)	1986	2.2	2.7	1.3	1.4	1.9	1.4	1.6	1.5	2.0	2.0	2.0	1.8
Total Cost (Million $)	1986	144.7	144.7	161.4	208.5	182.2	182.2	199.8	143.7	189.8	187.7	189.8	212.9
	1990	127.6	195.5	161.9	228.8	207.8	207.8	234.8	113.0	224.7	213.3	224.7	252.0
	2030	258.0	278.3	160.9	303.9	238.8	238.8	271.4	112.5	268.1	242.9	268.1	324.6
Total Benefits (Million $)	1986	412.5	412.5	432.0	477.2	478.0	478.0	480.7	350.5	458.3	497.9	457.7	500.3
	1990	483.6	575.0	447.0	533.2	600.9	600.9	614.3	313.8	544.9	593.5	542.4	645.2
	2030	1316.6	1671.5	684.3	1576.3	1903.8	1903.8	1757.7	540.4	1501.5	1846.0	1503.0	1899.9
Returns to the Treasury (Million $)	1986	151.1	151.1	151.4	159.3	160.2	161.7	159.5	149.6	161.6	162.0	161.6	159.4
	1990	208.7	233.0	181.8	220.3	182.8	175.9	200.2	154.1	197.8	207.2	197.2	217.0
	2030	560.4	653.0	348.3	612.6	568.9	514.1	604.4	305.4	667.8	570.3	675.8	700.5
Returns to States (Million $)	1986	32.0	32.0	34.1	34.1	34.1	34.1	34.1	34.0	34.1	34.1	34.1	34.1
	1990	45.6	49.5	38.5	46.9	37.2	37.2	40.8	33.4	40.7	42.7	40.6	46.1
	2030	121.1	143.2	71.8	145.0	119.9	119.9	131.7	65.5	147.2	121.1	147.5	157.2
Consumer Benefit (Million $)	1986	261.4	261.4	280.7	317.9	317.8	316.3	321.2	201.0	296.7	335.9	296.1	340.9
	1990	274.9	342.0	265.2	312.9	418.1	425.0	414.0	159.7	347.1	386.3	345.2	428.2
	2030	756.2	1018.6	336.0	963.7	1334.9	1389.7	1153.3	235.0	833.7	1275.7	827.2	1199.3
Income Effect (Million $)	1986	1300.0	1300.0	1300.0	1250.0	960.0	960.0	137.0	960.0	1330.0	1520.0	1330.0	1130.0
	1990	850.0	1460.0	1310.0	1370.0	1590.0	1590.0	159.0	850.0	1460.0	1680.0	1460.0	1240.0
	2030	2430.0	3790.0	1320.0	3790.0	4040.0	4040.0	379.0	910.0	2430.0	4310.0	2430.0	3520.0
Employment (Thousand Jobs)	1986	79.2	79.2	79.2	76.1	51.5	51.5	83.4	58.1	81.2	92.4	81.3	68.5
	1990	56.2	88.7	79.5	83.6	96.6	96.6	96.7	56.2	88.7	102.2	88.8	75.4
	2030	148.0	215.1	80.6	215.1	246.0	246.0	215.1	55.1	148.0	262.8	148.2	214.9

Economic Effects for Region 9 By Alternative

Effects		Recommended Program Low Bound	Recommended Program High Bound	Alternatives 1	2	3	3A	4	5	6	7	8	9
PNV Total (Billion $)	1986	7.0	9.4	5.0	7.5	9.0	9.0	8.5	4.7	8.2	9.1	8.0	8.8
PNV Market (Billion $)	1986	-0.1	0.0	-0.2	-0.2	-0.7	-0.7	-0.3	0.08	0.3	-0.1	-0.6	0.2
PNV Receipts (Billion $)	1986	-1.3	-1.5	-1.1	-2.0	-2.0	-2.2	-2.1	-0.7	-1.5	-1.7	-2.0	-1.6
Total Cost (Million $)	1986	95.9	95.9	108.9	129.0	128.1	128.1	138.9	77.3	132.1	122.4	126.1	133.8
	1990	83.1	133.4	109.8	174.2	153.9	153.9	177.1	75.4	175.8	142.0	157.8	172.9
	2030	216.8	229.9	107.6	231.5	177.2	177.2	225.8	75.4	218.3	157.7	180.4	205.8
Total Benefits (Million $)	1986	293.2	293.2	295.3	307.1	323.6	323.6	318.0	280.4	305.4	322.5	305.3	315.3
	1990	356.5	423.9	310.0	381.8	405.4	401.7	411.7	286.5	379.1	405.3	365.5	411.9
	2030	766.7	973.4	430.7	932.4	1023.4	1023.4	1018.5	329.2	1047.5	985.4	973.8	1046.8
Returns to the Treasury (Million $)	1986	29.1	29.1	39.5	41.7	41.4	34.3	41.8	41.0	42.5	42.1	42.1	41.7
	1990	54.3	61.4	42.4	54.2	45.5	43.5	52.6	36.5	50.3	48.1	50.4	51.8
	2030	159.7	185.0	94.6	191.2	112.2	94.6	182.4	59.4	154.7	116.2	124.8	199.0
Returns to States (Million $)	1986	6.9	6.9	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1
	1990	10.8	11.7	8.2	10.0	8.0	8.0	9.6	6.3	8.9	8.4	9.0	9.4
	2030	32.1	38.0	12.9	39.7	20.1	20.1	37.5	9.8	30.6	21.1	23.3	41.6
Consumer Benefit (Million $)	1986	264.1	264.1	255.9	265.4	282.2	289.3	276.2	239.3	262.9	280.4	263.2	273.5
	1990	302.2	362.5	267.7	327.5	359.9	358.2	359.1	249.9	328.8	357.2	315.1	360.1
	2030	607.0	788.4	336.0	741.2	911.1	928.8	836.1	269.8	892.8	869.2	849.0	847.9
Income Effect (Million $)	1986	1460.0	1460.0	1457.0	1543.1	1464.6	1464.6	1535.2	1255.3	1462.7	1417.3	1453.3	1543.1
	1990	1460.0	1770.0	1457.0	1851.1	1586.5	1586.5	1865.3	1256.0	1770.4	1546.4	1586.8	1945.7
	2030	2130.0	2910.0	1430.4	3101.6	2374.7	2374.7	3123.3	1258.9	2913.4	2331.5	2418.7	3345.4
Employment (Thousand Jobs)	1986	73.0	73.0	71.9	75.9	72.4	72.4	75.7	62.4	73.4	70.2	71.9	75.9
	1990	73.0	87.0	71.9	90.8	78.4	78.4	91.6	62.4	87.0	76.6	78.5	94.8
	2030	105.0	144.0	70.8	152.7	119.1	119.1	154.9	63.3	144.6	116.9	121.1	165.0

Economic Effects for Region 10 By Alternative

Effects		Recommended Program		Alternatives									
		Low Bound	High Bound	1	2	3	3A	4	5	6	7	8	9
PNV Total (Billion $)	1986	4.4	6.0	2.6	5.1	5.5	5.5	5.6	2.8	5.5	5.7	5.9	5.0
PNV Market (Billion $)	1986	2.5	3.0	1.5	2.7	2.4	2.4	2.7	2.0	2.5	3.1	2.7	2.3
PNV Receipts (Billion $)	1986	-0.6	-0.6	-0.8	-1.2	-1.2	-1.2	-1.2	-0.3	-1.3	-0.7	-1.3	-1.6
Total Cost (Million $)	1986	67.2	67.2	113.6	132.4	126.4	126.1	134.7	100.6	128.7	105.7	134.9	132.8
	1990	79.7	95.0	113.6	129.5	130.1	129.8	132.9	83.2	132.3	110.7	126.2	130.0
	2030	136.9	145.2	113.6	143.6	133.1	132.8	136.0	83.2	134.5	111.6	120.0	153.1
Total Benefits (Million $)	1986	174.7	174.7	211.9	211.7	207.5	206.1	213.6	200.2	209.1	207.6	220.6	214.0
	1990	224.0	266.3	217.6	262.7	264.1	262.7	270.4	204.1	265.5	260.5	208.3	266.6
	2030	542.1	688.3	275.8	657.8	692.4	695.1	709.7	250.8	720.2	657.3	666.3	662.7
Returns to the Treasury (Million $)	1986	26.8	26.8	32.3	33.8	33.1	33.0	33.8	32.6	33.0	33.5	33.6	33.8
	1990	91.1	101.4	91.8	95.3	87.2	83.0	93.9	79.6	87.2	89.6	86.9	95.3
	2030	63.3	74.3	88.7	98.3	76.8	74.3	80.3	77.4	78.2	87.8	87.0	52.3
Returns to States (Million $)	1986	5.7	5.7	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2
	1990	20.4	22.2	19.8	20.2	18.7	18.4	19.8	18.7	18.7	19.1	18.4	20.2
	2030	14.7	17.4	18.2	23.2	18.4	18.1	18.8	17.2	18.4	17.7	17.5	11.8
Consumer Benefit (Million $)	1986	147.8	147.8	179.6	177.9	174.4	173.1	179.8	167.6	176.0	174.1	187.0	180.2
	1990	132.1	164.9	125.8	167.4	177.0	179.7	176.5	124.5	178.3	170.9	121.4	171.3
	2030	478.8	614.0	187.2	559.6	615.6	620.8	629.4	173.4	642.0	569.5	576.4	610.4
Income Effect (Million $)	1986	279.8	279.8	356.4	359.6	347.9	344.0	362.2	334.2	352.8	434.7	352.8	361.0
	1990	337.5	371.7	354.8	386.6	388.6	384.6	396.4	331.2	396.2	374.2	396.2	387.1
	2030	637.4	644.7	353.6	673.8	660.9	657.0	684.1	328.1	667.9	613.6	667.9	786.4
Employment (Thousand Jobs)	1986	8.2	8.2	10.2	10.3	10.1	10.1	10.5	9.6	10.3	10.0	10.3	10.3
	1990	9.9	11.0	10.2	11.4	11.5	11.4	11.7	9.5	11.8	11.1	11.8	11.4
	2030	21.5	21.8	10.1	21.6	22.1	22.1	23.1	9.4	22.5	20.6	22.5	24.3

Returns to Treasury by Forest Service Region by Alternative

	Recommended Program		ALTERNATIVES									
	Low Bound	High Bound	1	2	3	3A	4	5	6	7	8	9
Region 1			(Millions of Dollars)									
1986												
Minerals	85.1	85.1	93.0	93.0	93.0	93.0	93.0	90.3	93.0	93.0	93.0	93.0
Range	2.1	2.1	2.8	2.8	2.7	2.7	2.8	1.1	2.8	2.8	2.8	2.8
Recreation	1.3	1.3	1.5	1.3	1.9	1.9	1.9	1.1	1.8	1.8	1.8	1.6
Timber	64.5	64.5	67.5	67.5	67.5	67.5	67.5	67.5	67.5	67.5	67.5	67.5
Total	153.0	153.0	164.8	164.6	165.1	165.1	165.2	160.0	165.1	165.1	165.1	164.9
1990												
Minerals	90.8	120.3	120.0	120.0	120.0	93.0	120.0	116.5	120.0	120.0	120.0	120.0
Range	2.0	2.0	2.8	2.8	2.7	2.7	2.9	1.1	2.8	2.8	2.8	2.8
Recreation	1.9	1.9	1.5	1.7	1.9	1.9	1.9	1.1	1.8	1.8	1.8	1.7
Timber	134.8	146.8	125.1	161.3	119.5	119.5	154.8	93.3	126.6	130.8	132.8	161.3
Total	229.5	271.0	249.4	285.8	244.1	217.1	279.6	212.0	251.2	255.4	257.4	285.8
2030												
Minerals	106.3	112.1	110.4	110.4	110.4	48.0	110.4	108.3	110.4	110.4	110.4	110.4
Range	2.1	2.8	2.8	3.9	2.7	2.7	3.2	1.1	3.0	3.1	3.2	4.0
Recreation	3.9	4.8	1.5	2.5	2.6	2.6	2.5	1.0	2.6	2.5	2.4	2.3
Timber	271.8	320.7	240.3	422.9	303.2	303.2	429.3	205.8	334.4	367.8	349.1	403.9
Total	384.1	440.4	355.0	539.7	418.9	356.5	545.4	316.2	450.4	483.8	465.1	520.6
Region 2												
1986												
Minerals	16.6	16.6	18.1	18.1	18.1	18.1	18.1	17.9	18.1	18.1	18.1	18.1
Range	3.7	3.7	4.1	4.3	4.2	4.2	4.3	4.1	4.3	4.2	4.3	4.3
Recreation	4.3	4.3	8.1	8.0	8.7	8.7	8.5	8.0	8.5	8.5	8.6	8.0
Timber	12.5	12.5	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6
Total	37.1	37.1	42.9	43.0	43.6	43.6	43.5	42.6	43.5	43.4	43.6	43.0
1990												
Minerals	17.8	23.5	23.6	23.6	23.5	18.2	23.5	23.3	23.5	23.5	23.5	18.2
Range	3.6	3.6	4.1	4.4	4.1	4.1	4.3	3.9	4.3	4.2	4.3	4.4
Recreation	7.6	7.6	8.4	8.7	9.4	9.4	9.4	8.2	9.5	9.4	9.4	8.7
Timber	17.5	19.1	14.3	21.0	13.6	13.6	21.1	11.2	16.5	15.9	15.8	21.0
Total	46.5	53.8	50.4	57.7	50.6	45.3	58.3	46.6	53.8	53.0	53.0	52.3
2030												
Minerals	47.7	50.4	49.7	49.7	49.7	21.6	49.9	49.5	49.7	49.9	47.8	21.6
Range	4.0	5.3	4.1	5.9	4.1	4.1	4.6	3.5	4.6	4.4	4.7	4.8
Recreation	18.8	23.2	9.2	13.0	15.6	15.6	13.9	8.8	15.1	15.0	14.3	14.6
Timber	22.0	25.9	21.2	32.1	22.8	22.8	29.9	15.1	28.2	25.6	22.2	33.3
Total	92.5	104.8	84.2	100.7	92.2	64.1	98.3	76.9	97.6	94.9	89.0	74.3

Returns to Treasury by Forest Service Region by Alternative

	Recommended Program		ALTERNATIVES									
	Low Bound	High Bound	1	2	3	3A	4	5	6	7	8	9
Region 3			(Millions of Dollars)									
1986												
Minerals	3.6	3.6	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Range	3.0	3.0	5.0	5.1	5.1	5.1	5.1	5.0	5.1	5.0	5.1	5.1
Recreation	3.0	3.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.9
Timber	32.8	32.8	34.3	34.3	34.3	34.3	34.3	34.3	34.3	34.3	34.3	34.3
Total	42.4	42.4	49.2	49.3	49.3	49.3	49.3	49.2	49.3	49.2	49.3	49.2
1990												
Minerals	3.8	5.1	5.0	5.0	5.0	3.9	5.0	5.0	5.0	5.0	5.0	5.0
Range	2.9	2.9	5.0	5.1	4.9	4.9	5.0	4.7	5.0	4.7	5.0	5.1
Recreation	5.1	5.1	6.0	6.3	6.3	6.3	6.3	6.0	6.1	6.3	6.3	5.9
Timber	63.7	69.4	56.1	69.4	55.6	55.6	64.0	54.3	58.4	59.3	58.1	69.4
Total	75.5	82.5	72.1	85.8	71.8	70.7	80.3	70.0	74.5	75.3	74.4	85.4
2030												
Minerals	8.6	9.1	9.0	9.0	9.0	3.9	9.0	9.0	9.0	9.0	9.0	9.0
Range	2.9	3.8	5.0	5.3	4.3	4.3	4.8	3.5	5.0	3.5	4.8	5.3
Recreation	8.6	10.6	6.0	8.0	7.2	7.2	7.2	5.9	6.9	7.2	7.2	7.9
Timber	91.6	108.1	108.0	113.9	89.4	89.4	111.8	66.9	102.9	117.2	103.5	120.1
Total	111.7	131.6	128.0	136.2	109.9	104.8	132.8	85.3	123.8	136.9	124.5	142.3
Region 4												
1986												
Minerals	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Range	2.4	2.4	3.5	3.9	3.5	3.5	3.6	3.5	3.6	3.5	3.6	3.9
Recreation	4.5	4.5	7.3	7.3	7.3	7.3	7.3	7.1	7.3	7.3	7.3	7.3
Timber	14.7	14.7	15.1	15.1	15.1	15.1	15.1	15.1	15.1	15.1	15.1	15.1
Total	22.0	22.0	26.4	26.8	26.4	26.4	26.5	26.2	26.5	26.4	26.5	26.8
1990												
Minerals	0.8	1.1	1.0	1.0	1.0	0.8	1.0	1.0	1.0	1.0	1.0	1.0
Range	2.5	2.5	3.5	4.3	3.4	3.4	3.8	3.1	3.7	3.5	3.9	4.3
Recreation	7.5	7.5	7.3	7.6	8.2	8.2	7.9	7.1	7.8	7.9	7.9	7.8
Timber	28.9	31.4	20.0	27.1	19.1	19.1	27.1	12.2	25.5	19.4	26.1	25.3
Total	39.7	42.5	31.8	40.0	31.7	31.5	39.8	23.4	38.0	31.8	38.9	38.4
2030												
Minerals	2.8	2.9	2.5	2.7	2.5	1.2	2.5	2.5	2.8	2.5	2.3	2.8
Range	2.6	3.5	3.5	5.1	3.4	3.4	4.0	3.0	3.8	3.6	4.1	4.7
Recreation	13.7	17.0	7.2	8.1	9.5	9.6	9.4	7.1	8.5	8.7	8.7	9.1
Timber	40.9	48.3	32.2	73.9	28.0	28.0	60.0	26.5	43.9	26.4	43.9	77.5
Total	60.0	71.7	45.4	89.8	43.4	42.2	75.9	39.1	59.0	41.2	59.0	94.1

Returns to Treasury by Forest Service Region by Alternative

	Recommended Program		ALTERNATIVES									
	Low Bound	High Bound	1	2	3	3A	4	5	6	7	8	9
Region 5			(Millions of Dollars)									
1986												
Minerals	2.3	2.3	2.2	3.4	2.1	2.6	3.1	2.1	2.6	3.5	3.1	3.4
Range	0.7	0.7	1.0	1.1	0.9	0.9	1.1	1.0	1.0	1.1	1.1	1.1
Recreation	7.0	7.0	9.2	9.3	9.5	9.5	9.4	8.2	9.5	9.6	9.5	9.1
Timber	195.3	195.3	206.2	206.2	206.2	206.2	206.2	206.2	206.2	206.2	206.2	206.2
Total	205.3	205.3	218.6	220.0	218.7	219.2	219.8	217.5	219.3	220.4	219.9	219.8
1990												
Minerals	5.6	7.5	6.3	11.9	5.7	5.7	9.5	5.7	7.4	11.7	9.8	11.9
Range	0.7	0.7	1.0	1.3	0.9	0.9	1.3	1.0	1.2	1.2	1.2	1.3
Recreation	11.3	11.3	9.2	9.5	9.7	9.7	9.7	8.3	9.8	9.8	9.8	9.3
Timber	201.7	219.6	221.5	227.5	188.0	188.0	234.1	226.2	241.5	225.8	243.1	219.6
Total	229.3	239.1	238.0	250.2	204.3	204.3	254.6	241.2	259.9	248.5	263.9	242.1
2030												
Minerals	30.5	32.2	23.2	41.2	22.1	13.8	37.7	22.1	31.7	40.7	37.7	41.2
Range	1.0	1.4	1.0	1.7	1.2	1.2	1.7	0.9	1.4	1.4	1.4	1.7
Recreation	14.7	18.2	9.4	10.9	12.4	12.4	12.9	8.7	13.1	12.4	13.0	11.7
Timber	333.5	393.5	387.5	377.3	363.1	363.1	384.9	424.2	400.0	441.3	433.2	381.2
Total	379.7	445.3	421.1	431.1	398.8	390.5	437.2	455.9	446.2	495.8	485.3	435.8
Region 6												
1986												
Minerals	0.3	0.3	0.3	0.3	0.2	0.3	0.2	0.2	0.3	0.3	0.3	0.3
Range	0.7	0.7	1.3	1.3	1.3	1.3	1.3	0.9	1.3	1.3	1.3	1.3
Recreation	3.9	3.9	6.7	6.9	6.8	6.9	6.8	6.2	6.8	7.0	7.0	7.0
Timber	640.2	640.2	674.3	674.3	674.3	674.3	674.3	674.3	674.3	674.3	674.3	674.3
Total	645.1	645.1	682.6	682.8	682.6	682.8	682.6	681.6	682.7	682.9	682.9	682.9
1990												
Minerals	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4
Range	0.8	0.8	1.3	1.4	1.3	1.3	1.3	0.9	1.3	1.4	1.4	1.4
Recreation	5.9	5.9	6.9	7.0	7.1	7.2	6.8	6.1	7.1	7.1	7.7	6.7
Timber	728.4	793.2	919.4	834.0	870.0	861.5	949.2	720.7	942.0	940.2	958.4	928.8
Total	735.4	800.3	928.0	842.8	878.7	870.3	957.6	728.0	950.8	949.1	967.9	937.3
2030												
Minerals	0.6	0.7	0.5	0.7	0.7	0.3	0.7	0.5	0.7	0.7	0.7	0.7
Range	1.0	1.3	1.3	1.5	1.4	1.4	1.3	0.9	1.5	1.5	1.5	1.5
Recreation	13.9	17.2	7.1	8.6	9.5	9.7	8.3	6.9	9.5	8.9	8.9	8.6
Timber	1095.2	1292.3	1635.8	1077.4	1390.8	1371.6	1180.0	1255.4	1479.6	1493.5	1472.4	1148.2
Total	1110.7	1311.5	1644.7	1088.2	1402.4	1383.0	1190.3	1263.7	1491.3	1504.6	1483.5	1159.0

Returns to Treasury by Forest Service Region by Alternative

	Recommended Program		ALTERNATIVES									
	Low Bound	High Bound	1	2	3	3A	4	5	6	7	8	9
Region 8			(Millions of Dollars)									
1986												
Minerals	23.0	23.0	15.0	23.0	23.7	25.2	23.0	13.6	25.2	25.5	25.2	23.0
Range	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2
Recreation	3.2	3.2	5.7	5.7	5.8	5.8	5.8	5.3	5.7	5.8	5.7	5.8
Timber	124.5	124.5	130.5	130.5	130.5	130.5	130.5	130.5	130.5	130.5	130.5	130.5
Total	151.0	151.0	151.4	159.4	160.2	161.7	159.5	149.5	161.6	162.0	161.6	159.5
1990												
Minerals	26.4	35.0	27.6	32.8	34.1	27.1	37.2	20.4	35.0	36.4	35.0	32.8
Range	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2
Recreation	5.2	5.2	5.7	5.8	6.1	6.1	6.1	5.2	5.8	6.0	5.8	6.0
Timber	176.8	192.5	148.3	181.6	142.6	142.6	156.8	128.3	156.8	164.7	156.2	178.1
Total	208.7	233.0	181.8	220.4	183.0	176.0	200.3	154.0	197.8	207.3	197.2	217.1
2030												
Minerals	76.1	80.3	61.2	32.4	89.2	34.4	77.5	43.2	79.1	85.8	85.8	71.8
Range	0.4	0.6	0.2	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Recreation	20.2	24.9	5.7	7.6	8.7	8.7	8.7	5.2	7.0	9.0	7.0	8.4
Timber	463.8	547.2	281.3	572.2	470.8	470.8	518.0	256.8	581.5	475.4	582.9	620.2
Total	560.5	653.0	348.4	612.6	568.9	514.1	604.4	305.4	667.8	570.4	675.9	700.6
Region 9												
1986												
Minerals	1.6	1.6	7.1	9.4	8.9	1.8	9.4	8.7	10.1	9.7	9.7	9.4
Range	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Recreation	2.5	2.5	6.1	6.0	6.2	6.2	6.1	6.0	6.1	6.1	6.1	6.0
Timber	24.9	24.9	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2	26.2
Total	29.1	29.1	39.5	41.7	41.4	34.3	41.8	41.0	42.5	42.1	42.1	41.7
1990												
Minerals	11.1	14.7	9.7	14.2	13.4	11.4	14.2	11.2	14.7	14.4	14.4	14.2
Range	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Recreation	4.0	4.0	6.1	6.2	6.3	6.3	6.3	6.1	6.3	6.3	6.3	6.2
Timber	39.0	42.5	26.5	33.7	25.7	25.7	32.0	19.2	29.2	27.3	29.6	31.3
Total	54.2	61.3	42.4	54.2	45.5	43.5	52.6	36.6	50.3	48.1	50.4	51.8
2030												
Minerals	31.1	32.8	43.0	32.4	31.7	14.1	32.4	20.0	32.4	31.7	31.7	32.4
Range	0.3	0.3	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
Recreation	8.0	9.9	6.1	7.2	8.0	8.0	8.0	6.3	7.8	7.8	7.8	7.7
Timber	120.3	142.0	45.5	151.4	72.5	72.5	141.9	33.0	114.4	76.6	85.2	158.7
Total	159.7	185.0	94.7	191.2	112.3	94.7	182.4	59.4	154.7	116.2	124.8	199.0

Returns to Treasury by Forest Service Region by Alternative

	Recommended Program		ALTERNATIVES									
	Low Bound	High Bound	1	2	3	3A	4	5	6	7	8	9
Region 10			(Millions of Dollars)									
1986												
Minerals	4.0	4.0	3.6	5.1	4.4	4.3	5.1	3.9	4.3	4.8	4.8	5.1
Range 1/	--	--	--	--	--	--	--	--	--	--	--	--
Recreation	0.3	0.3	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.8	4.7
Timber	22.6	22.6	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Total	26.9	26.9	32.3	33.8	33.1	33.0	33.8	32.6	33.0	33.5	33.6	33.8
1990												
Minerals	9.5	12.5	12.6	14.6	12.4	9.6	14.6	4.9	12.4	13.3	13.3	14.6
Range 1/	--	--	--	--	--	--	--	--	--	--	--	--
Recreation	0.5	0.5	4.7	4.8	4.8	4.8	4.8	4.7	4.8	4.8	4.9	4.8
Timber	81.1	88.3	74.5	76.0	70.0	68.6	74.5	70.0	70.0	71.5	68.7	76.0
Total	91.1	101.3	91.8	95.4	87.2	83.0	93.9	79.6	87.2	89.6	86.9	95.4
2030												
Minerals	4.3	4.6	15.9	5.3	3.2	2.0	5.3	8.7	4.6	17.0	17.0	5.3
Range 1/	--	--	--	--	--	--	--	--	--	--	--	--
Recreation	2.1	2.6	4.7	5.3	5.5	5.5	5.5	4.7	5.5	5.4	5.1	5.4
Timber	56.9	67.2	68.1	87.6	68.1	66.8	69.5	64.0	68.1	65.4	64.8	41.6
Total	63.3	74.4	88.7	98.2	76.8	74.3	80.3	77.4	78.2	87.8	86.9	52.3

1/ No Grazing in R-10

Areas Involved[1] in Soil Disturbing Management Activities

ALTERNATIVES - YEAR 2000

(Thousand Acres)

Region 1

Activity	1986 (BASE)	Recommended Program Low Bound	High Bound	1	2	3	3A	4	5	6	7	8	9
Timber Harvest	110.1	118.6	126.6	115.2	249.4	123.0	123.0	245.3	78.1	151.0	185.6	164.2	264.8
Reforestation	51.4	44.5	36.0	55.0	73.9	37.1	37.1	67.3	19.4	44.2	55.0	45.1	78.5
Fuel Treatment	24.1	50.6	52.6	56.6	156.0	75.1	75.1	154.1	57.8	99.9	119.2	103.2	165.6
Minerals	8.2	9.1	9.5	8.6	11.3	8.5	8.5	10.0	8.3	9.5	10.0	10.0	11.3
Roads	4.6	5.7	5.2	5.2	10.4	5.3	5.3	9.7	4.4	6.3	8.5	7.5	8.9
Range Improvement	1.2	15.2	30.2	25.8	32.2	28.4	28.4	73.6	5.5	30.2	32.2	73.6	32.2
Wildlife Improvement	4.6	23.8	32.5	16.5	41.6	45.0	45.0	46.5	5.9	44.6	38.5	41.3	42.4
Watershed Improvement	.1	2.9	3.1	2.4	4.3	3.0	3.0	4.0	1.4	3.6	3.3	3.1	4.5
Totals	204.3	270.4	295.7	285.3	579.1	325.4	325.4	610.5	180.8	389.3	452.3	448.0	608.2

Region 2

Activity	1986 (BASE)	Recommended Program Low Bound	High Bound	1	2	3	3A	4	5	6	7	8	9
Timber Harvest	79.3	114.5	117.3	76.1	156.7	94.4	94.4	130.7	51.8	114.0	101.5	102.6	156.7
Reforestation	8.6	8.0	8.7	3.7	12.6	5.6	5.6	10.5	2.8	8.7	7.2	7.6	12.6
Fuel Treatment	5.7	9.6	9.7	14.0	29.5	15.7	15.7	24.6	11.4	21.3	21.2	21.4	29.5
Minerals	61.4	72.2	62.3	60.2	60.5	59.3	59.3	60.7	45.6	62.3	60.5	60.7	60.5
Roads	2.2	2.6	2.6	1.5	2.9	1.8	1.8	2.7	.8	2.2	1.9	2.0	3.0
Range Improvement	34.3	37.8	36.7	26.6	45.3	17.2	17.2	43.5	16.6	38.6	40.1	43.6	43.6
Wildlife Improvement	18.1	33.6	32.0	10.5	20.6	29.9	29.9	29.4	5.7	27.7	27.3	27.5	19.1
Watershed Improvement	.3	0.8	0.9	.5	.6	1.0	1.0	1.0	.3	.9	.5	1.0	.6
Totals	209.9	279.1	270.2	193.1	328.7	224.9	224.9	303.1	135.0	275.7	260.2	266.4	325.6

[1] In order to determine actual acres disturbed, multiply these figures by the weighting factors found in Chapter 4.

Areas Involved in Soil Disturbing Management Activities [1]

ALTERNATIVES - YEAR 2000

(Thousand Acres)

Region 3

Activity	1986 (BASE)	Recommended Program Low Bound	High Bound	1	2	3	3A	4	5	6	7	8	9
Timber Harvest	209.8	256.4	258.2	210.7	291.8	185.9	185.9	274.3	109.9	250.7	274.3	250.7	291.8
Reforestation	11.7	10.3	10.4	8.8	12.0	7.7	7.7	11.4	5.0	10.4	11.4	10.4	12.0
Fuel Treatment	50.2	129.7	130.7	109.9	152.2	97.0	97.0	143.2	57.4	130.7	143.2	130.7	152.2
Minerals	5.0	5.8	6.2	5.0	6.3	6.2	6.2	6.3	5.7	6.2	5.4	6.2	6.3
Roads	2.3	2.6	2.6	2.2	3.2	2.1	2.1	3.0	1.0	2.7	3.0	2.7	3.2
Range Improvement	11.8	26.7	31.0	20.0	46.8	17.8	17.8	36.5	.4	32.7	.4	36.5	46.8
Wildlife Improvement	12.3	33.6	35.5	20.5	21.2	46.6	46.6	29.1	3.4	26.8	51.5	26.8	21.2
Watershed Improvement	4.0	13.7	14.3	6.1	17.8	17.3	17.3	24.0	1.9	20.0	5.0	20.8	17.8
Totals	307.1	478.8	488.9	383.2	551.3	380.6	380.6	527.8	84.7	480.2	494.2	484.8	551.3

Region 4

Activity	1986 (BASE)	Recommended Program Low Bound	High Bound	1	2	3	3A	4	5	6	7	8	9
Timber Harvest	43.6	57.1	57.6	28.1	87.7	29.9	29.9	73.1	22.4	49.7	31.6	53.4	87.7
Reforestation	15.3	23.9	23.0	16.2	51.0	17.7	17.7	42.9	12.0	28.0	13.0	30.8	51.0
Fuel Treatment	33.3	50.1	52.0	27.0	74.6	29.6	29.6	57.2	25.5	50.6	33.3	51.3	74.6
Minerals	37.9	31.8	32.2	45.0	33.0	32.3	32.3	31.9	30.3	32.2	38.3	34.4	33.0
Roads	1.6	2.1	2.0	1.3	2.4	1.3	1.3	2.1	.8	1.9	1.2	2.1	2.0
Range Improvement	21.0	40.1	43.0	22.5	53.7	31.9	31.9	35.1	14.6	32.0	33.5	47.3	44.0
Wildlife Improvement	25.9	45.4	67.2	45.1	78.2	104.2	104.2	114.1	38.4	73.9	69.7	89.5	78.8
Watershed Improvement	.8	2.2	3.5	.8	.9	3.2	3.2	1.6	.2	2.3	.7	1.5	1.3
Totals	179.4	252.7	280.5	186.0	381.5	250.1	250.1	358.0	144.2	270.6	221.3	310.3	372.4

[1] In order to determine actual acres disturbed, multiply these figures by the weighting factors found in Chapter 4.

Areas Involved [1] in Soil Disturbing Management Activities

ALTERNATIVES - YEAR 2000

(Thousand Acres)

Region 5

Activity	1986 (BASE)	Recommended Program Low Bound	High Bound	1	2	3	3A	4	5	6	7	8	9
Timber Harvest	195.2	225.5	233.6	181.6	283.2	173.1	173.1	228.7	164.3	244.0	249.7	260.1	342.2
Reforestation	33.1	42.2	44.1	42.5	85.0	47.8	47.8	70.7	41.1	76.7	76.6	84.6	112.5
Fuel Treatment	22.7	28.7	30.0	42.5	85.0	44.8	44.8	62.2	39.5	65.7	55.2	69.0	112.5
Minerals	1.9	3.6	4.1	2.2	4.4	3.8	3.8	4.1	3.6	4.1	4.1	4.1	5.3
Roads	3.1	3.7	3.9	3.3	3.9	3.5	3.5	4.9	3.1	4.5	4.5	4.8	4.3
Range Improvement	16.4	27.4	25.1	39.9	53.6	23.6	23.6	53.6	12.3	24.1	25.1	29.8	53.6
Wildlife Improvement	21.9	61.7	80.7	27.1	34.4	88.0	88.0	65.3	18.1	74.2	70.2	69.2	57.9
Watershed Improvement	1.2	9.1	8.9	2.4	10.2	17.3	17.3	13.7	1.5	13.8	16.2	13.7	13.6
Totals	295.5	401.9	430.4	341.5	559.7	401.9	401.9	503.2	283.5	507.1	501.6	535.3	701.9

Region 6

Activity	1986 (BASE)	Recommended Program Low Bound	High Bound	1	2	3	3A	4	5	6	7	8	9
Timber Harvest	571.7	600.9	599.8	545.6	612.7	505.0	497.2	603.4	381.4	599.8	611.0	612.6	837.2
Reforestation	94.5	119.7	117.3	105.3	138.9	111.7	109.9	129.7	74.8	120.5	139.3	139.4	189.2
Fuel Treatment	168.6	177.0	178.2	177.4	177.3	168.6	166.0	191.4	112.9	177.0	190.7	192.0	241.7
Minerals	2.3	3.2	3.9	6.1	6.3	6.3	6.3	5.3	3.9	5.6	5.6	6.6	6.3
Roads	5.9	7.8	7.6	7.5	8,5	7.4	7.3	8.6	5.1	8.4	8.6	8.6	11.3
Range Improvement	2.6	9.4	11.0	8.1	13.7	15.8	15.8	12.4	3.8	13.0	15.3	13.2	13.7
Wildlife Improvement	15.9	32.7	41.5	23.1	35.6	48.0	47.7	32.4	19.2	44.5	39.3	43.0	42.4
Watershed Improvement	.1	0	0.1	2.1	3.2	3.3	3.3	2.3	1.8	3.1	3.2	3.2	3.2
Totals	861.6	950.7	959.4	875.2	996.2	866.1	853.5	985.5	602.9	971.9	1013.0	1018.6	1345.0

[1] In order to determine actual acres disturbed, multiply these figures by the weighting factors found in Chapter 4.

Areas Involved [1] in Soil Disturbing Management Activities

ALTERNATIVES - YEAR 2000

(Thousand Acres)

Region 8

Activity	1986 (BASE)	Recommended Program Low Bound	High Bound	1	2	3	3A	4	5	6	7	8	9
Timber Harvest	236.3	338.9	391.0	235.1	553.3	354.9	354.9	408.1	200.0	407.9	379.9	407.9	553.3
Reforestation	97.9	112.9	117.0	96.1	146.7	98.4	98.4	122.3	61.5	120.0	117.0	120.0	193.4
Fuel Treatment	0	0	0	0	0	0	0	0	0	0	0	0	0
Minerals	5.4	6.9	6.8	5.7	6.9	6.2	6.2	7.4	4.9	6.4	6.3	6.4	6.9
Roads	3.8	4.6	4.6	3.4	7.5	4.5	4.5	5.4	1.8	5.6	4.7	5.6	6.8
Range Improvement	12.0	74.0	79.0	74.0	106.9	75.8	75.8	107.0	46.0	99.9	106.7	99.5	106.5
Wildlife Improvement	139.5	236.3	261.8	158.5	176.1	229.9	229.9	232.0	96.5	196.1	207.8	196.1	201.1
Watershed Improvement	1.0	1.4	1.3	1.6	1.7	1.3	1.3	1.6	.6	1.6	1.3	1.6	1.7
Totals	495.9	775.0	861.5	574.4	999.1	771.0	771.0	883.8	411.3	837.5	823.7	837.1	1069.7

Region 9

Activity	1986 (BASE)	Recommended Program Low Bound	High Bound	1	2	3	3A	4	5	6	7	8	9
Timber Harvest	130.9	203.9	243.8	127.5	321.3	163.3	163.3	321.3	89.1	237.3	163.6	176.4	321.3
Reforestation	55.8	79.5	95.1	50.6	128.8	65.4	65.4	128.8	39.2	95.1	65.3	70.9	128.8
Fuel Treatment	2.2	7.7	10.1	1.9	16.8	1.6	1.6	16.8	1.5	10.1	1.6	1.6	16.8
Minerals	6.1	7.8	7.9	1.6	9.2	7.3	7.3	7.9	1.5	7.9	8.5	7.6	9.2
Roads	1.6	2.5	3.0	1.6	5.2	3.3	3.3	5.3	.6	4.2	2.6	3.5	3.3
Range Improvement	2.5	5.1	5.5	3.1	7.5	2.9	2.9	5.6	2.3	5.5	3.2	3.3	7.5
Wildlife Improvement	30.7	44.7	46.3	27.1	56.6	63.7	63.7	55.7	24.0	53.6	54.5	55.4	44.4
Watershed Improvement	.1	0.1	0.2	0	.3	.1	.1	.3	.1	0	.2	.2	.3
Totals	229.9	351.3	411.9	213.4	545.7	307.6	307.6	541.7	158.3	413.7	299.5	318.9	531.6

[1] In order to determine actual acres disturbed, multiply these figures by the weighting factors found in Chapter 4.

Areas Involved in Soil Disturbing Management Activities [1]

ALTERNATIVES - YEAR 2000

(Thousand Acres)

Region 10

Activity	1986 (BASE)	Recommended Program Low Bound	High Bound	1	2	3	3A	4	5	6	7	8	9
Timber Harvest	18.7	20.6	20.6	19.6	24.2	19.6	19.3	20.1	19.6	19.6	19.6	18.7	24.2
Reforestation	1.0	1.5	1.5	2.0	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.0	2.1
Fuel Treatment	*	0.1	0.1	0	.1	.1	.1	.1	0	.1	.1	0	.1
Minerals	2.7	15.0	18.6	4.1	19.0	14.9	14.9	19.0	4.1	14.9	18.6	16.5	19.0
Roads	.5	0.9	1.0	.8	1.6	1.3	1.3	1.4	.6	1.3	1.3	.4	1.3
Range [3] Improvement	0	0	0	0	0	0	0	0	0	0	0	0	0
Wildlife Improvement	2.9	8.1	11.1	4.2	6.4	12.0	12.0	15.7	1.9	11.7	5.4	5.9	6.4
Watershed Improvement	*	0.4	0.4	.1	.2	.8	.8	.2	.1	.4	.1	1.1	.2
	25.8	46.6	53.3	30.8	53.6	50.8	50.5	58.6	28.3	50.1	47.2	44.6	53.3

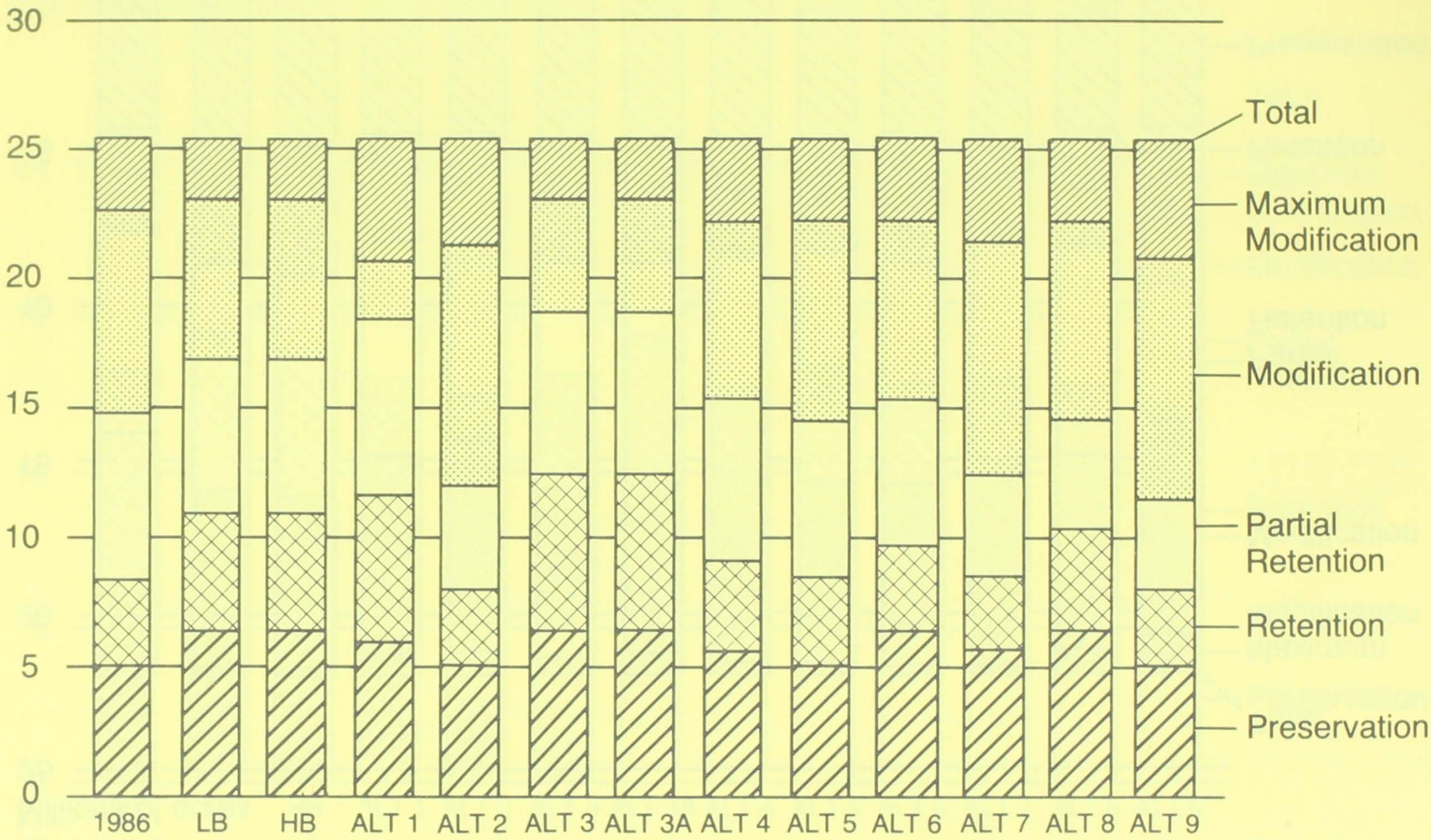
* LESS THAN .05

[1] In order to determine actual acres disturbed, multiply these figures by the weighting factors found in Chapter 4.

[2] Region 10 has no range management activities.

Figure K.1

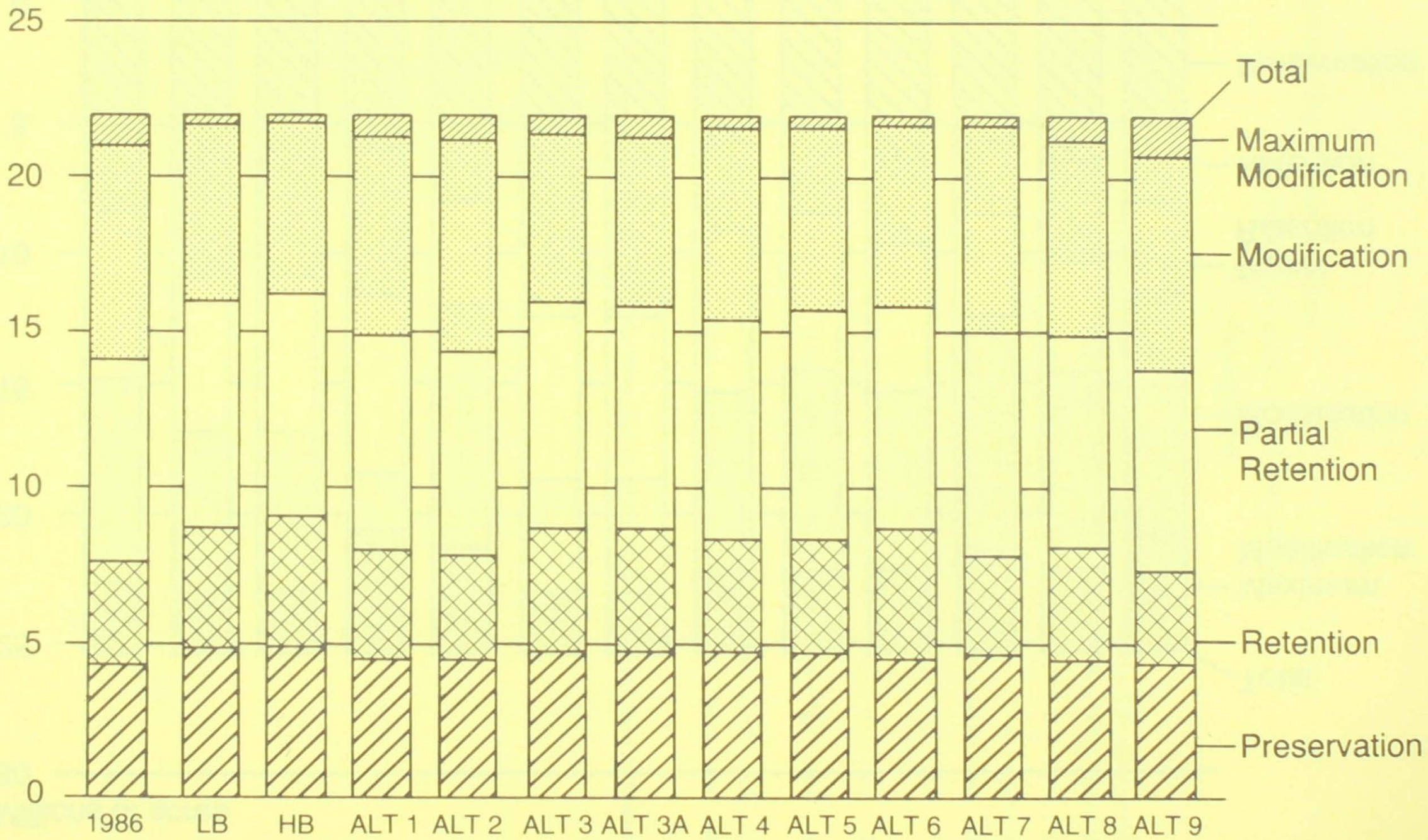
Visual Condition Classes for Region 1 by Alternative at Year 2000 (NFS)



HB = High Bound of the Recommended Program
LB = Low Bound of the Recommended Program
1986 = Base year for comparison

Figure K.2

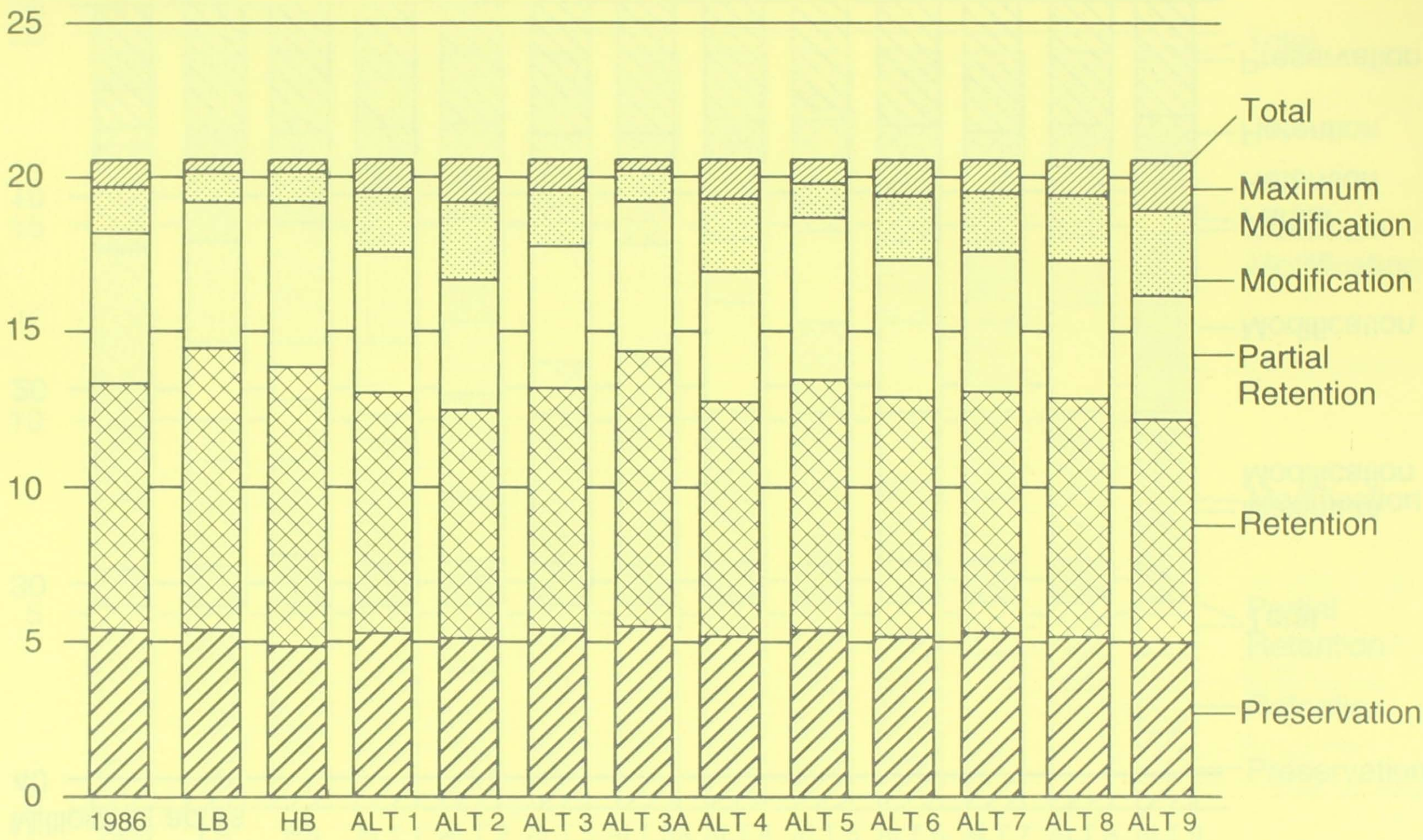
Visual Condition Classes for Region 2 by Alternative at Year 2000 (NFS)



HB = High Bound of the Recommended Program
LB = Low Bound of the Recommended Program
1986 = Base year for comparison

Figure K.3

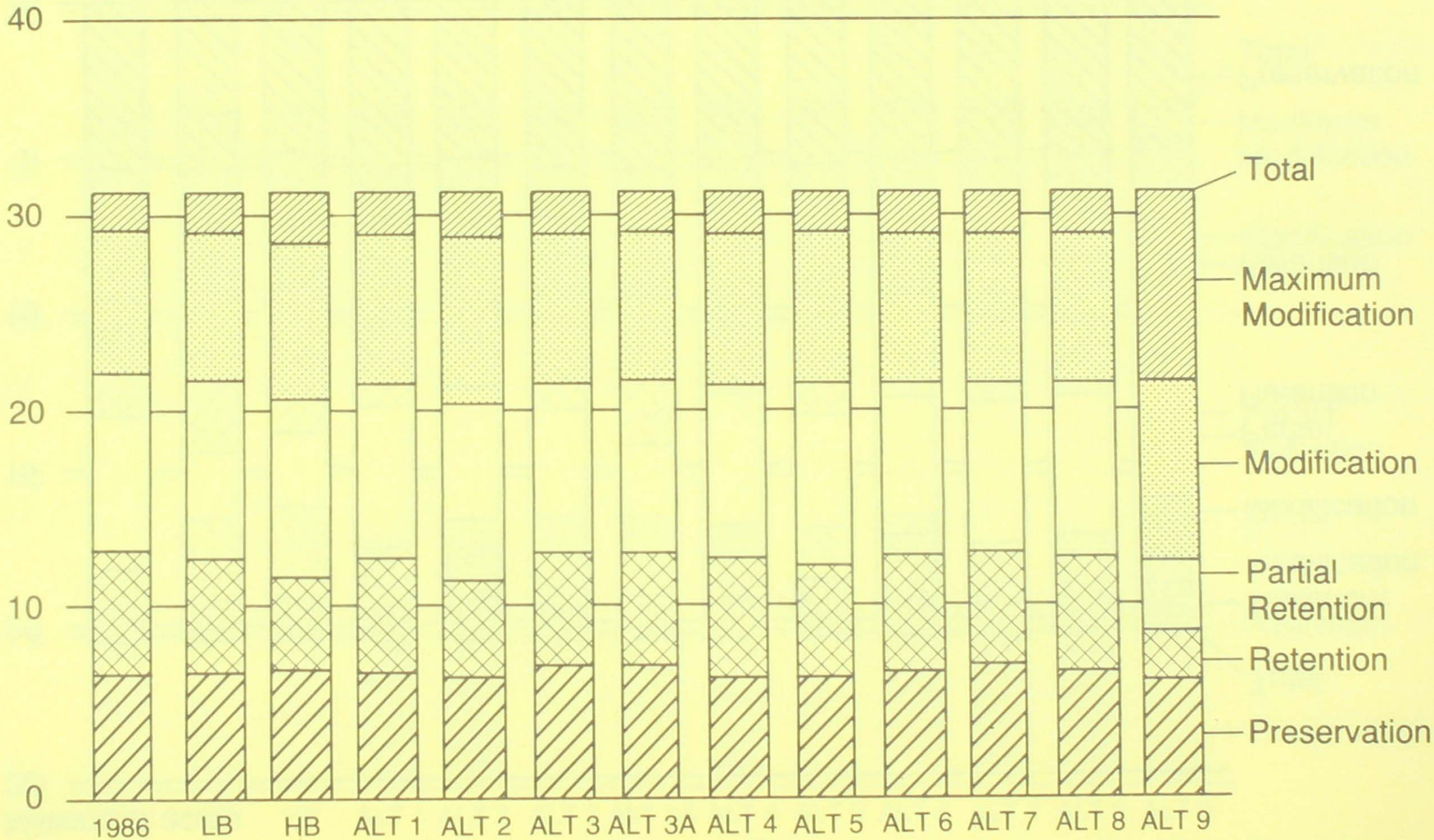
Visual Condition Classes for Region 3 by Alternative at Year 2000 (NFS)



HB = High Bound of the Recommended Program
LB = Low Bound of the Recommended Program
1986 = Base year for comparison

Figure K.4

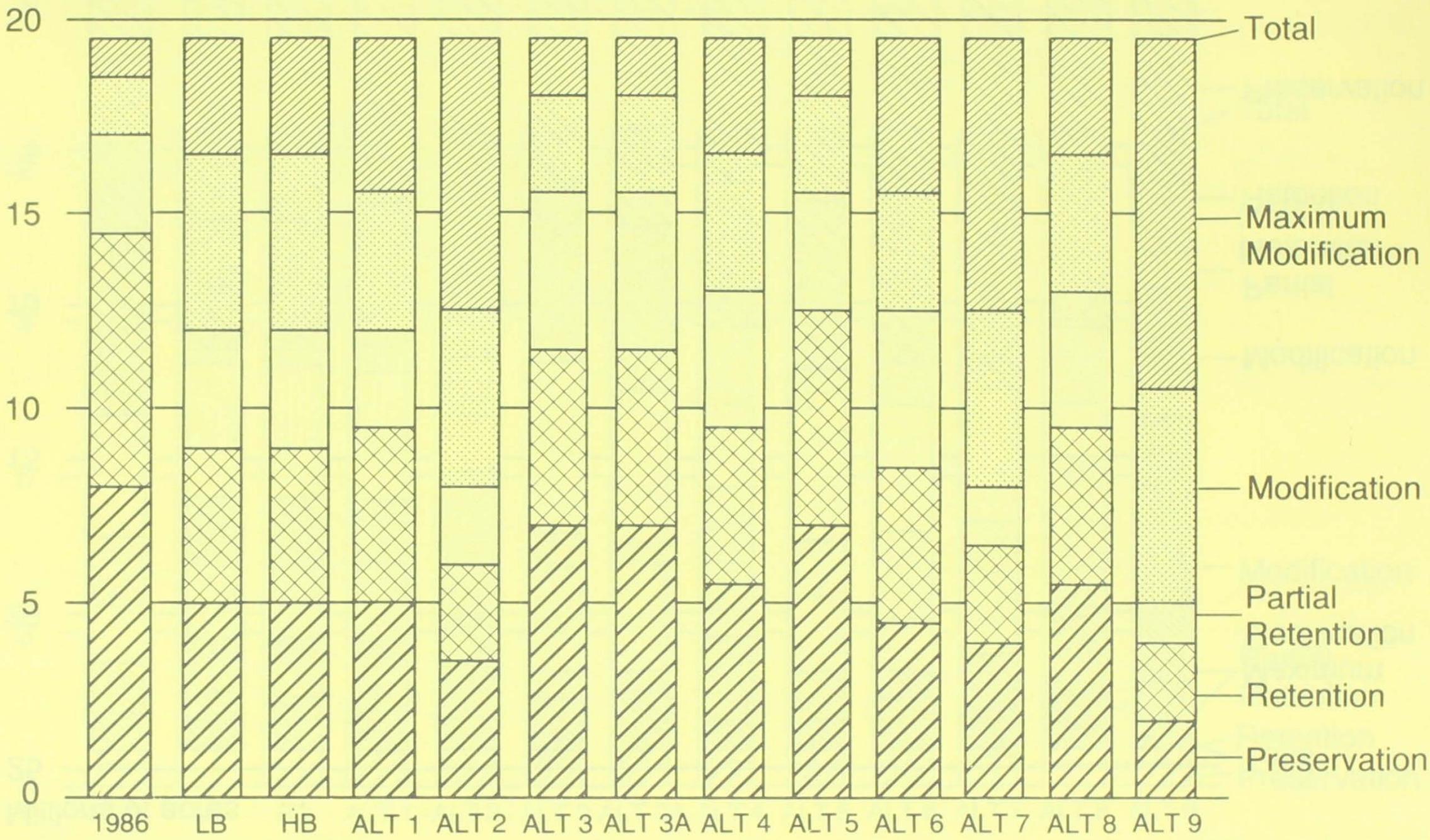
Visual Condition Classes for Region 4 by Alternative at Year 2000 (NFS)



HB = High Bound of the Recommended Program
LB = Low Bound of the Recommended Program
1986 = Base year for comparison

Figure K.5

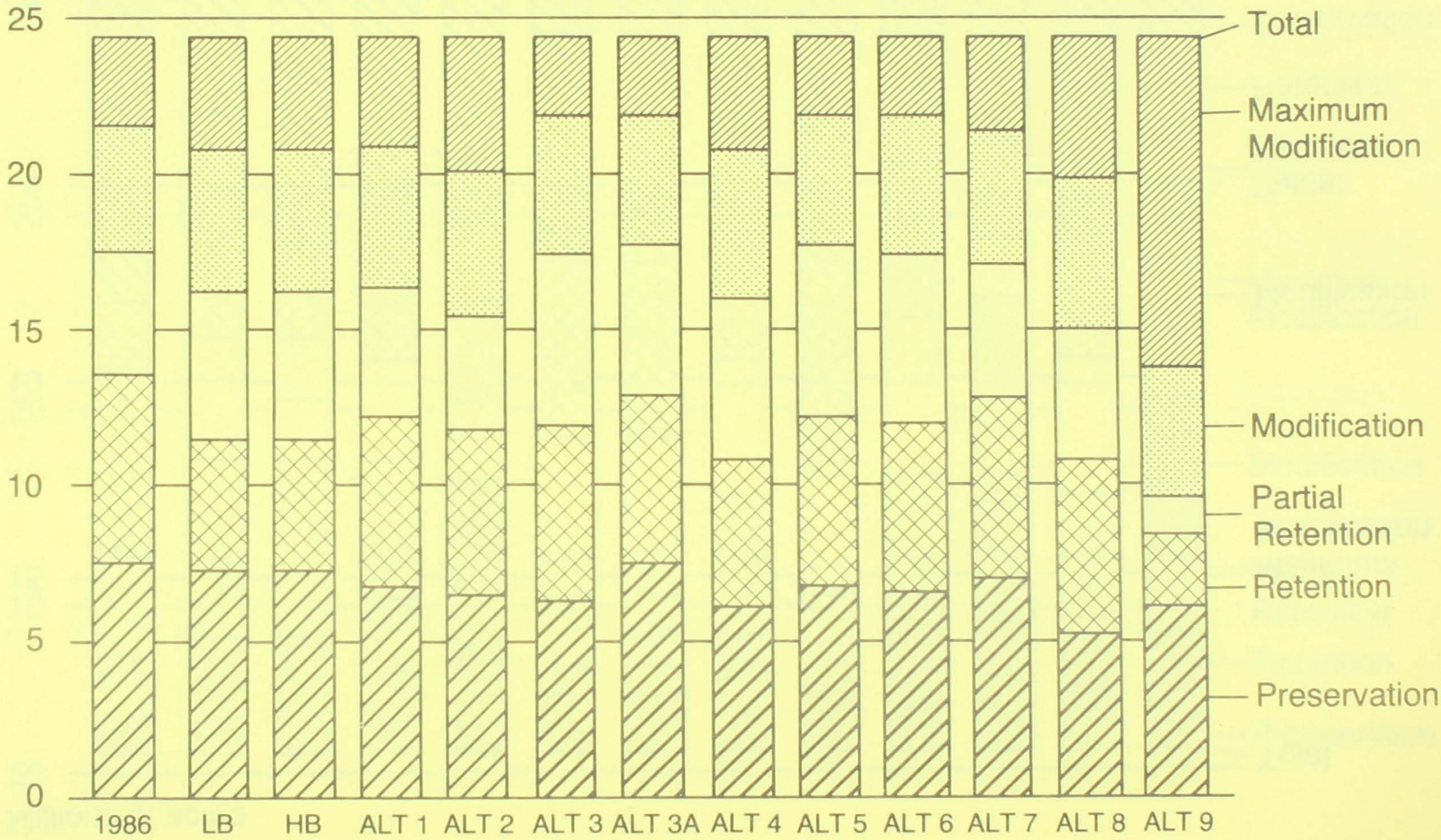
Visual Condition Classes for Region 5 by Alternative at Year 2000 (NFS)



HB = High Bound of the Recommended Program
LB = Low Bound of the Recommended Program
1986 = Base year for comparison

Figure K.6

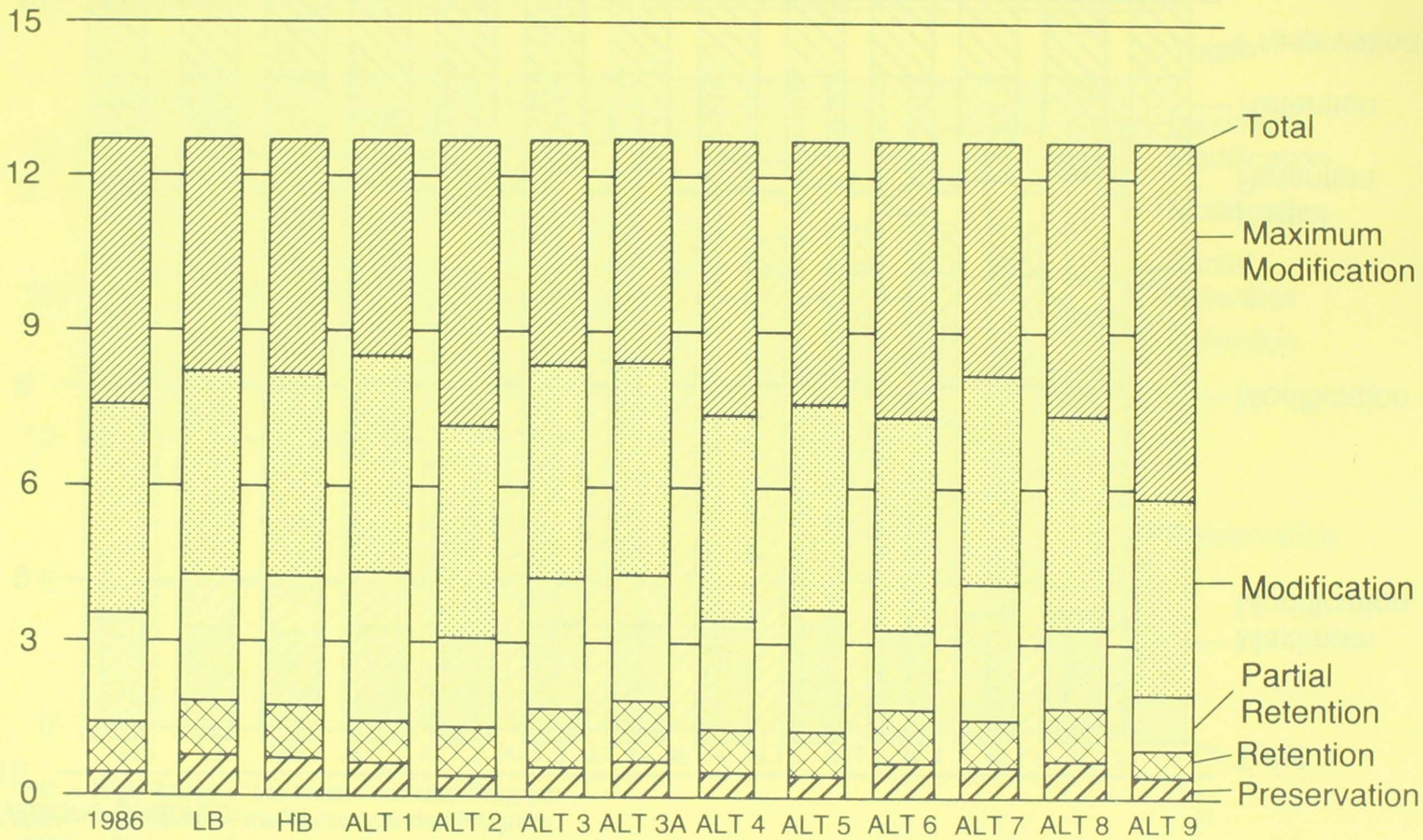
Visual Condition Classes for Region 6 by Alternative at Year 2000 (NFS)



HB = High Bound of the Recommended Program
LB = Low Bound of the Recommended Program
1986 = Base year for comparison

Figure K.7

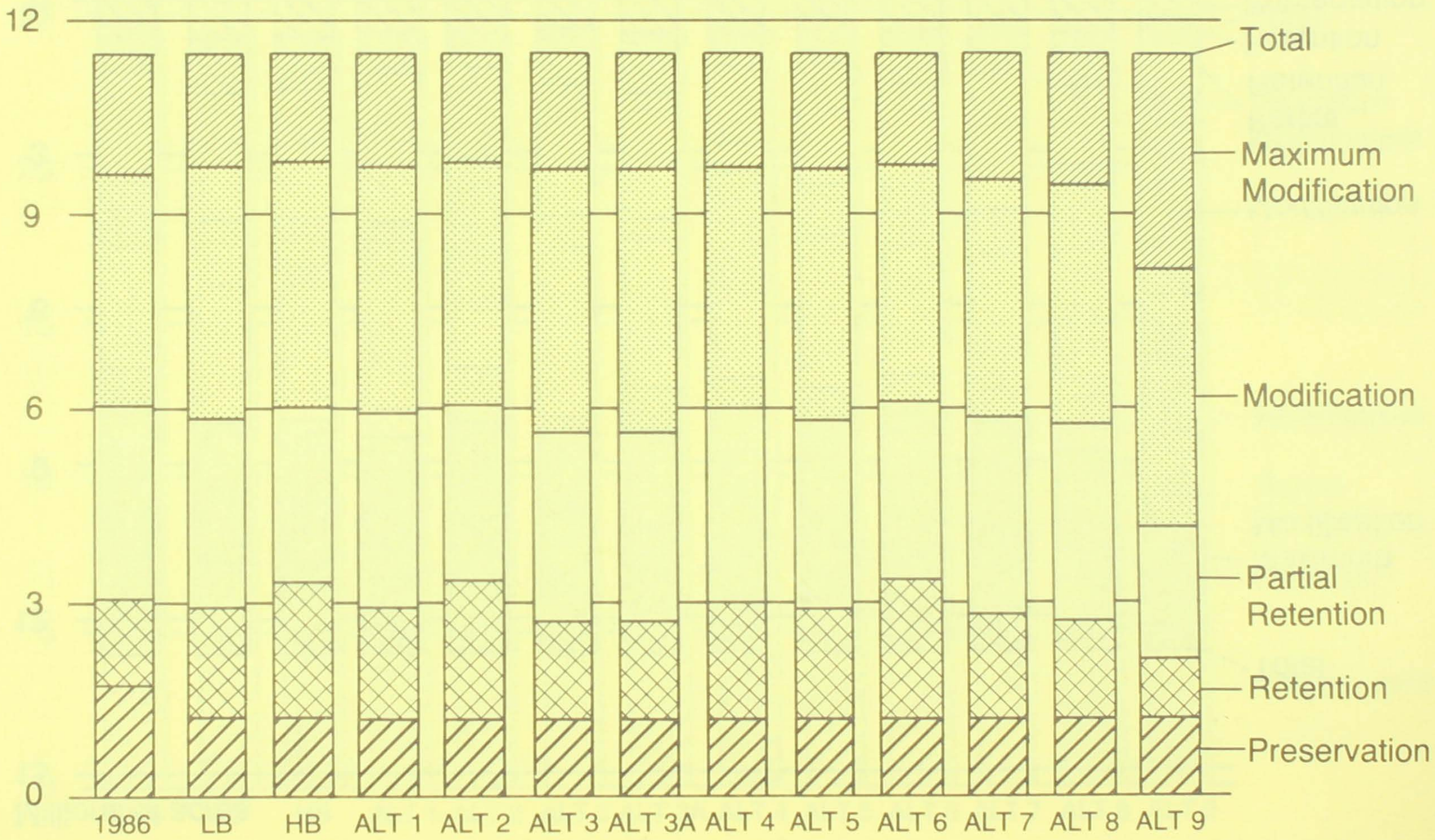
Visual Condition Classes for Region 8 by Alternative at Year 2000 (NFS)



HB = High Bound of the Recommended Program
LB = Low Bound of the Recommended Program
1986 = Base year for comparison

Figure K.8

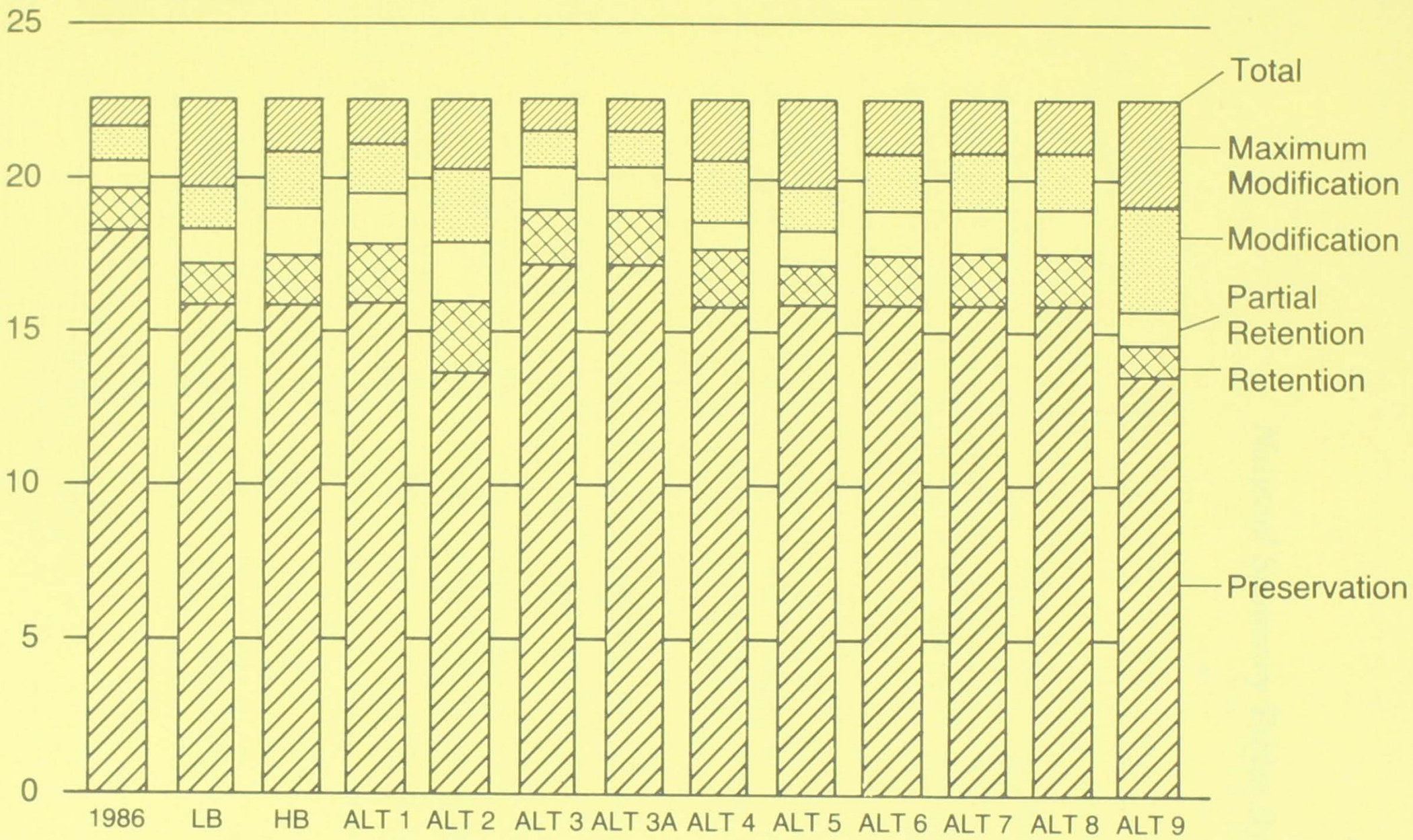
Visual Condition Classes for Region 9 by Alternative at Year 2000 (NFS)



HB = High Bound of the Recommended Program
LB = Low Bound of the Recommended Program
1986 = Base year for comparison

Figure K.9

Visual Condition Classes for Region 10 by Alternative at Year 2000 (NFS)



HB = High Bound of the Recommended Program
LB = Low Bound of the Recommended Program
1986 = Base year for comparison

Appendix L:

National Summary Tables By Alternative

TABLE L.LA PROJECTED NATIONAL FOREST SYSTEM PROGRAM OUTPUTS, ACTIVITIES, AND COSTS -- LOW BOUND RECOMMENDED PROGRAM

INDICATOR	UNIT OF MEASURE 1/	1986	1987	1988	1990	1993	2000	2030
WATER-MINERALS								
INCREASED WATER YIELD	THOUSAND ACRE FEET	418	418	418	418	545	790	1350
ENERGY MINERALS PRODUCED	QUADS	9.3	9.3	9.3	9.3	9.5	11.2	12.3
NONENERGY MINERALS PROD	MILLION $	2111	2111	2111	2111	2403	3464	3473
RANGE								
PERMITTED GRAZING	MILLION AUM	9.8	9.8	9.8	9.8	9.8	10.0	10.3
IMPROVED RANGE ALLOTMENTS	PERCENT	75	79	72	71	73	78	87
RECREATION-WILDERNESS								
RECREATION USE	MILLION RVD's	215	215	215	216	224	260	340
WILDERNESS USE	MILLION RVD's	10	10	10	12	13	15	19
WILDERNESS MANAGEMENT	MILLION ACRES	32	35	35	35	35	35	35
TRAIL CONST/RECONST	MILES	755	502	502	502	2100	3100	2100
TIMBER								
TIMBER OFFERED	BILLION BF	11.4	10.0	10.0	9.0	10.1	11.8	15.6
TIMBER OFFERED	BILLION CF	2.1	1.9	1.9	1.8	2.0	2.3	3.1
FUELWOOD	MILLION CF	254	261	261	261	266	280	250
REFORESTATION	THOUSAND ACRES	346	335	335	335	390	430	570
TSI	THOUSAND ACRES	334	302	302	302	370	410	600
WILDLIFE/FISH								
WILDLIFE AND FISH USE	MILLION USER DAYS	23	23	23	20	21	23	28
COMMERCIAL HARVEST ANADROMOUS FISH	MILLION POUNDS	106	106	105	103	103	107	135
PROTECTION/SUPPORT								
FIRE MANAGEMENT EFFECTIVENESS INDEX	$/THOUSAND ACRE PROTECTED	2158	2001	2200	2400	2300	2000	1600
TIMBER PURCHASER ROAD CONST/RECONST	MILES	6758	6037	6037	6037	6911	7444	9496
ARTERIAL COLLECTOR ROAD CONST/RECONST	MILES	1004	842	842	842	2289	2156	3404
HUMAN RESOURCES PROGRAMS	THOUS PERSON YEARS	9.8	5.6	5.6	5.6	9.4	9.4	9.5
COSTS								
OPERATIONAL	MILLION $	786	760	760	760	962	1078	1237
CAPITAL INVESTMENT	MILLION $	723	626	626	626	1009	1169	1341
TOTAL-NFS	MILLION $	1509	1386	1386	1386	1971	2247	2578
ALLOCATED	MILLION $	157	175	175	175	229	308	296
APPROPRIATED	MILLION $	1352	1211	1211	1211	1742	1939	2282

1/ ABBREVIATIONS: BF = Board Feet, CF = Cubic Feet, AUM = Animal Unit Months, RVD = Recreation Visitor Days, WFUD = Wildlife and Fish User Days, THOUS = Thousand, QUADS = One Quadrillion BTU (British Thermal Unit)

TABLE L.HA -- PROJECTED NATIONAL FOREST SYSTEM PROGRAM OUTPUTS, ACTIVITIES, AND COSTS -- HIGH BOUND RECOMMENDED PROGRAM

INDICATOR	UNIT OF MEASURE 1/	1986	1987	1988	1990	1993	2000	2030
WATER-MINERALS								
INCREASED WATER YIELD	THOUSAND ACRE FEET	418	418	552	629	756	1001	1555
ENERGY MINERALS PRODUCED	QUADS	9.3	9.3	9.5	9.7	10.0	11.8	13
NONENERGY MINERALS PROD	MILLION $	2111	2111	2403	2517	2694	3883	3925
RANGE								
PERMITTED GRAZING	MILLION AUM	9.8	9.8	9.8	9.8	10.1	10.3	11.3
IMPROVED RANGE ALLOTMENTS	PERCENT	75	79	83	87	88	91	96
RECREATION-WILDERNESS								
RECREATION USE	MILLION RVD's	215	215	226	233	290	310	400
WILDERNESS USE	MILLION RVD's	10	10	14	15	16	18	25
WILDERNESS MANAGEMENT	MILLION ACRES	32	35	35	37	37	38	40
TRAIL CONST/RECONST	MILES	755	502	4129	4470	5084	5450	2215
TIMBER								
TIMBER OFFERED	BILLION BF	11.4	10.0	11.5	11.6	12.6	14.0	20.0
TIMBER OFFERED	BILLION CF	2.1	1.9	2.1	2.2	2.4	2.5	3.9
FUELWOOD	MILLION CF	254	261	266	277	285	299	265
REFORESTATION	THOUSAND ACRES	346	335	390	426	438	453	600
TSI	THOUSAND ACRES	334	302	370	404	449	476	632
WILDLIFE/FISH								
WILDLIFE AND FISH USE	MILLION USER DAYS	23	23	26	28	29	35	40
COMMERCIAL HARVEST ANADROMOUS FISH	MILLION POUNDS	106	106	109	114	122	142	177
PROTECTION/SUPPORT								
FIRE MANAGEMENT EFFECTIVENESS INDEX	$/THOUSAND ACRE PROTECTED	2158	2001	1950	1832	1603	1601	1600
TIMBER PURCHASER ROAD CONST/RECONST	MILES	6758	6037	8332	8592	9001	9454	11240
ARTERIAL COLLECTOR ROAD CONST/RECONST	MILES	1004	842	2157	2704	2979	2737	4030
HUMAN RESOURCES PROGRAMS	THOUS PERSON YEARS	9.8	5.6	9.4	9.4	9.4	9.4	9.5
COSTS								
OPERATIONAL	MILLION $	786	760	979	1040	1089	1203	1278
CAPITAL INVESTMENT	MILLION $	723	626	908	1008	1141	1279	1373
TOTAL-NFS	MILLION $	1509	1386	1887	2048	2230	2482	2651
ALLOCATED	MILLION $	157	175	190	221	266	328	231
APPROPRIATED	MILLION $	1352	1211	1697	1827	1964	2154	2420

1/ ABBREVIATIONS: BF = Board Feet, CF = Cubic Feet, AUM = Animal Unit Months, RVD = Recreation Visitor Days, WFUD = Wildlife and Fish User Days, THOUS = Thousand, QUADS = One Quadrillion BTU (British Thermal Unit)

TABLE L.1A -- PROJECTED NATIONAL FOREST SYSTEM PROGRAM OUTPUTS, ACTIVITIES, AND COSTS -- ALTERNATIVE 1 (CONSTANT)

INDICATOR	UNIT OF MEASURE 1/	1986	1987	1988	1990	1993	2000	2030
WATER-MINERALS								
INCREASED WATER YIELD	THOUSAND ACRE FEET	557.2	577.0	587.1	597.2	627.0	705.4	895.9
ENERGY MINERALS PRODUCED	QUADS	9.1	9.1	9.1	9.1	9.2	9.2	9.0
NONENERGY MINERALS PROD	MILLION $	2000.3	2023.4	2098.6	2122.1	2112.5	2150.0	2466.2
RANGE								
PERMITTED GRAZING	MILLION AUM	9.8	9.8	9.8	9.7	9.7	9.7	9.7
IMPROVED RANGE ALLOTMENTS	PERCENT	74	-	-	83	-	91	94
RECREATION-WILDERNESS								
RECREATION USE	MILLION RVD's	213.8	213.8	214.1	214.6	215.6	215.5	218.2
WILDERNESS USE	MILLION RVD's	12.0	12.3	12.8	13.1	13.5	13.9	15.6
WILDERNESS MANAGEMENT	MILLION ACRES	34.2	34.2	34.2	34.2	34.2	34.2	34.2
TRAIL CONST/RECONST	MILES	599.3	612.7	658.3	696.6	636.1	636.3	615.7
TIMBER								
TIMBER OFFERED	BILLION BF	11.2	11.2	11.1	11.1	10.9	10.8	10.5
TIMBER OFFERED	BILLION CF	2.1	2.1	2.1	2.1	2.1	2.1	2.1
FUELWOOD	MILLION CF	226.0	226.4	226.6	228.2	230.0	228.2	215.5
REFORESTATION	THOUSAND ACRES	375.8	380.6	379.7	380.3	380.2	380.3	361.3
TSI	THOUSAND ACRES	350.6	352.0	350.8	350.5	355.9	363.2	358.3
WILDLIFE/FISH								
WILDLIFE AND FISH USE	MILLION USER DAYS	26.0	26.0	26.0	24.9	26.1	26.1	26.1
COMMERCIAL HARVEST ANADROMOUS FISH	MILLION POUNDS	110.3	110.3	110.3	110.3	110.3	110.4	110.4
PROTECTION/SUPPORT								
FIRE MANAGEMENT EFFECTIVENESS INDEX	$/THOUSAND ACRE PROTECTED	1874	1853	1834	1817	1805	1795	1795
TIMBER PURCHASER ROAD CONST/RECONST	MILES	7667.3	7613.5	7610.7	7502.2	7397.0	7301.6	7279.2
ARTERIAL COLLECTOR ROAD CONST/RECONST	MILES	2436.4	2519.8	2507.4	2517.9	2530.6	2447.4	2279.0
HUMAN RESOURCES PROGRAMS	THOUS PERSON YEARS	6.0	5.9	5.9	6.0	6.0	6.0	6.0
COSTS								
OPERATIONAL	MILLION $	939.4	940.5	942.2	945.7	950.9	951.8	953.4
CAPITAL INVESTMENT	MILLION $	970.0	975.8	983.6	987.3	973.7	944.7	871.4
TOTAL-NFS	MILLION $	1909.4	1916.4	1925.8	1933.0	1924.6	1896.4	1824.7
ALLOCATED	MILLION $	190.0	189.7	191.3	193.0	193.6	198.7	168.0
APPROPRIATED	MILLION $	1719.4	1726.7	1734.4	1740.0	1730.9	1697.7	1656.7

1/ ABBREVIATIONS: BF = Board Feet, CF = Cubic Feet, AUM = Animal Unit Months, RVD = Recreation Visitor Days, WFUD = Wildlife and Fish User Days, THOUS = Thousand, QUADS = One Quadrillion BTU (British Thermal Unit)

TABLE L.2A -- PROJECTED NATIONAL FOREST SYSTEM PROGRAM OUTPUTS, ACTIVITIES, AND COSTS -- ALTERNATIVE 2 (MARKET)

INDICATOR	UNIT OF MEASURE 1/	1986	1987	1988	1990	1993	2000	2030
WATER-MINERALS								
INCREASED WATER YIELD	THOUSAND ACRE FEET	657.9	698.0	727.2	925.3	1044.7	1184.3	1850.9
ENERGY MINERALS PRODUCED	QUADS	9.5	9.5	9.8	10.1	10.3	11.5	14.1
NONENERGY MINERALS PROD	MILLION $	2207.2	2369.4	2711.2	2685.2	2763.3	3860.3	3991.0
RANGE								
PERMITTED GRAZING	MILLION AUM	10.2	10.3	10.5	10.7	10.9	11.9	13.3
IMPROVED RANGE ALLOTMENTS	PERCENT	76	-	-	91	-	94	96
RECREATION-WILDERNESS								
RECREATION USE	MILLION RVD's	214.4	220.6	229.4	236.8	244.9	271.5	371.3
WILDERNESS USE	MILLION RVD's	11.4	12.0	13.4	14.4	15.1	16.5	20.4
WILDERNESS MANAGEMENT	MILLION ACRES	33.0	33.0	33.0	33.0	34.4	34.4	34.5
TRAIL CONST/RECONST	MILES	683.6	830.6	841.8	923.4	1011.9	1051.4	1069.1
TIMBER								
TIMBER OFFERED	BILLION BF	13.6	14.1	14.3	15.0	15.8	17.3	19.7
TIMBER OFFERED	BILLION CF	2.5	2.6	2.7	2.8	3.0	3.3	3.9
FUELWOOD	MILLION CF	250.1	255.0	261.7	274.5	291.4	299.2	289.1
REFORESTATION	THOUSAND ACRES	456.7	482.2	505.0	561.1	604.8	651.0	729.6
TSI	THOUSAND ACRES	475.6	495.6	517.2	547.8	597.1	709.1	783.4
WILDLIFE/FISH								
WILDLIFE AND FISH USE	MILLION USER DAYS	25.8	26.7	27.6	28.3	29.3	31.6	34.6
COMMERCIAL HARVEST ANADROMOUS FISH	MILLION POUNDS	109.3	111.1	112.9	117.4	124.4	136.4	169.6
PROTECTION/SUPPORT								
FIRE MANAGEMENT EFFECTIVENESS INDEX	$/THOUSAND ACRE PROTECTED	1766	1730	1696	1651	1722	1590	1576
TIMBER PURCHASER ROAD CONST/RECONST	MILES	9206.3	9541.5	9914.7	10706.2	11765.0	12397.9	12448.3
ARTERIAL COLLECTOR ROAD CONST/RECONST	MILES	3322.6	3485.7	3611.2	3854.2	4076.2	4445.9	4502.3
HUMAN RESOURCES PROGRAMS	THOUS PERSON YEARS	8.8	8.8	8.9	8.9	8.9	8.8	9.0
COSTS								
OPERATIONAL	MILLION $	1048.8	1079.9	1109.8	1159.8	1215.4	1280.9	1367.0
CAPITAL INVESTMENT	MILLION $	1242.9	1310.0	1401.6	1514.8	1579.7	1641.8	1464.7
TOTAL-NFS	MILLION $	2291.7	2389.9	2511.4	2674.6	2795.0	2922.7	2840.8
ALLOCATED	MILLION $	276.8	302.5	341.1	398.0	416.8	430.2	305.0
APPROPRIATED	MILLION $	2014.9	2087.4	2170.3	2276.6	2378.2	2492.4	2535.8

1/ ABBREVIATIONS: BF = Board Feet, CF = Cubic Feet, AUM = Animal Unit Months, RVD = Recreation Visitor Days, WFUD = Wildlife and Fish User Days, THOUS = Thousand, QUADS = One Quadrillion BTU (British Thermal Unit)

TABLE L.3A -- PROJECTED NATIONAL FORESTRY SYSTEM PROGRAM OUTPUTS, ACTIVITIES, AND COSTS -- ALTERNATIVE 3 (NONMARKET)

INDICATOR	UNIT OF MEASURE 1/	1986	1987	1988	1990	1993	2000	2030
WATER-MINERALS								
INCREASED WATER YIELD	THOUSAND ACRE FEET	492.7	516.3	537.3	578.7	635.6	789.4	1026.3
ENERGY MINERALS PRODUCED	QUADS	9.1	9.2	9.2	9.2	9.2	10.3	9.9
NONENERGY MINERALS PROD	MILLION $	1990.8	2144.9	2318.1	2433.9	2532.5	3267.6	3482.4
RANGE								
PERMITTED GRAZING	MILLION AUM	9.7	9.7	9.6	9.5	9.5	9.4	9.5
IMPROVED RANGE ALLOTMENTS	PERCENT	74	-	-	83	-	89	89
RECREATION-WILDERNESS								
RECREATION USE	MILLION RVD's	227.3	232.3	241.8	254.4	266.0	299.2	438.0
WILDERNESS USE	MILLION RVD's	14.7	15.2	15.7	17.0	17.9	19.9	26.6
WILDERNESS MANAGEMENT	MILLION ACRES	34.2	35.4	36.1	38.7	41.4	42.8	43.1
TRAIL CONST/RECONST	MILES	1475.3	1680.2	2029.2	2269.6	2346.6	2249.4	2308.4
TIMBER								
TIMBER OFFERED	BILLION BF	10.4	10.4	10.5	10.5	10.8	11.2	12.0
TIMBER OFFERED	BILLION CF	1.9	2.0	2.0	2.0	2.0	2.2	2.4
FUELWOOD	MILLION CF	241.9	247.3	251.2	259.9	263.4	272.6	263.3
REFORESTATION	THOUSAND ACRES	370.8	376.3	381.8	379.2	374.2	393.4	397.0
TSI	THOUSAND ACRES	365.6	362.9	366.7	370.3	382.4	396.5	417.3
WILDLIFE/FISH								
WILDLIFE AND FISH USE	MILLION USER DAYS	27.7	28.3	29.1	30.5	32.6	36.1	42.5
COMMERCIAL HARVEST ANADROMOUS FISH	MILLION POUNDS	107.2	108.7	110.4	113.7	118.4	130.4	150.2
PROTECTION/SUPPORT								
FIRE MANAGEMENT EFFECTIVENESS INDEX	$/THOUSAND ACRE PROTECTED	1740	1706	1700	1654	1623	1696	1595
TIMBER PURCHASER ROAD CONST/RECONST	MILES	7214.4	7322.9	7526.7	7656.1	7827.2	8010.0	8055.2
ARTERIAL COLLECTOR ROAD CONST/RECONST	MILES	2743.5	2865.8	2920.9	3070.5	3153.4	3204.0	3287.9
HUMAN RESOURCES PROGRAMS	THOUS PERSON YEARS	9.4	9.3	9.3	9.3	9.4	9.3	9.5
COSTS								
OPERATIONAL	MILLION $	1048.3	1067.0	1085.1	1117.8	1148.1	1193.0	1292.0
CAPITAL INVESTMENT	MILLION $	1059.0	1109.6	1177.3	1251.3	1256.1	1256.6	1076.5
TOTAL-NFS	MILLION $	2107.3	2176.5	2262.4	2369.0	2404.2	2449.6	2368.6
ALLOCATED	MILLION $	252.3	275.0	309.1	345.0	350.9	355.0	207.0
APPROPRIATED	MILLION $	1855.0	1901.6	1953.2	2024.0	2053.3	2094.6	2161.6

1/ ABBREVIATIONS: BF = Board Feet, CF = Cubic Feet, AUM = Animal Unit Months, RVD = Recreation Visitor Days, WFUD = Wildlife and Fish User Days, THOUS = Thousand, QUADS = One Quadrillion BTU (British Thermal Unit)

TABLE L.3A-A -- PROJECTED NATIONAL FORESTRY SYSTEM PROGRAM OUTPUTS, ACTIVITIES, AND COSTS -- ALTERNATIVE 3A (HIGH WILDERNESS)

INDICATOR	UNIT OF MEASURE 1/	1986	1987	1988	1990	1993	2000	2030
WATER-MINERALS								
INCREASED WATER YIELD	THOUSAND ACRE FEET	492.0	515.5	536.6	578.0	634.8	788.6	1025.4
ENERGY MINERALS PRODUCED	QUADS	9.1	9.2	9.2	9.2	9.2	10.3	9.9
NONENERGY MINERALS PROD	MILLION $	1990.8	2144.9	2318.1	2433.9	2532.5	3267.6	3482.4
RANGE								
PERMITTED GRAZING	MILLION AUM	9.7	9.7	9.6	9.5	9.5	9.4	9.4
IMPROVED RANGE ALLOTMENTS	PERCENT	74	-	-	83	-	89	89
RECREATION-WILDERNESS								
RECREATION USE	MILLION RVD's	227.3	232.3	241.8	254.4	266.0	299.2	436.6
WILDERNESS USE	MILLION RVD's	16.7	17.2	17.9	19.3	20.4	23.0	32.0
WILDERNESS MANAGEMENT	MILLION ACRES	34.2	35.4	36.1	38.7	41.5	45.1	52.3
TRAIL CONST/RECONST	MILES	1496.3	1699.7	2048.1	2290.5	2367.6	2270.5	2493.6
TIMBER								
TIMBER OFFERED	BILLION BF	10.3	10.4	10.4	10.5	10.7	11.2	12.0
TIMBER OFFERED	BILLION CF	1.9	1.9	2.0	2.0	2.0	2.1	2.4
FUELWOOD	MILLION CF	241.5	246.9	250.7	259.4	262.9	272.1	262.9
REFORESTATION	THOUSAND ACRES	369.5	374.9	380.5	377.7	372.5	391.7	395.8
TSI	THOUSAND ACRES	364.3	361.6	365.3	368.7	380.7	394.7	415.8
WILDLIFE/FISH								
WILDLIFE AND FISH USE	MILLION USER DAYS	27.6	28.3	29.1	30.3	32.6	36.1	42.5
COMMERCIAL HARVEST ANADROMOUS FISH	MILLION POUNDS	107.2	108.7	110.4	113.7	118.4	130.4	150.2
PROTECTION/SUPPORT								
FIRE MANAGEMENT EFFECTIVENESS INDEX	$/THOUSAND ACRE PROTECTED	1740	1706	1700	1654	1623	1696	1595
TIMBER PURCHASER ROAD CONST/RECONST	MILES	7194.5	7302.9	7507.2	7630.6	7800.9	7983.0	8032.9
ARTERIAL COLLECTOR ROAD CONST/RECONST	MILES	2731.7	2853.1	2908.3	3057.3	3140.2	3190.1	3274.6
HUMAN RESOURCES PROGRAMS	THOUS PERSON YEARS	9.4	9.3	9.3	9.3	9.4	9.3	9.5
COSTS								
OPERATIONAL	MILLION $	1047.5	1066.1	1084.2	1116.6	1146.8	1192.1	1291.4
CAPITAL INVESTMENT	MILLION $	1056.1	1106.6	1174.4	1247.4	1252.0	1252.5	1075.0
TOTAL-NFS	MILLION $	2103.6	2172.7	2258.7	2363.9	2398.8	2444.6	2366.3
ALLOCATED	MILLION $	252.0	274.5	308.7	345.0	350.2	354.3	206.0
APPROPRIATED	MILLION $	1851.6	1898.1	1950.0	2018.9	2048.5	2090.3	2160.3

1/ ABBREVIATIONS: BF = Board Feet, CF = Cubic Feet, AUM = Animal Unit Months, RVD = Recreation Visitor Days, WFUD = Wildlife and Fish User Days, THOUS = Thousand, QUADS = One Quadrillion BTU (British Thermal Unit)

TABLE L.4A -- PROJECTED NATIONAL FOREST SYSTEM PROGRAM OUTPUTS, ACTIVITIES, AND COSTS -- ALTERNATIVE 4 (ALL RESOURCES)

INDICATOR	UNIT OF MEASURE 1/	1986	1987	1988	1990	1993	2000	2030
WATER-MINERALS								
INCREASED WATER YIELD	THOUSAND ACRE FEET	654.4	689.9	719.2	795.9	933.3	1143.0	1524.0
ENERGY MINERALS PRODUCED	QUADS	9.4	9.4	9.5	9.6	9.9	10.7	13.2
NONENERGY MINERALS PROD	MILLION $	2190.2	2349.7	2575.5	2718.9	2818.6	3898.2	3928.3
RANGE								
PERMITTED GRAZING	MILLION AUM	10.0	10.0	10.1	10.2	10.4	10.4	10.9
IMPROVED RANGE ALLOTMENTS	PERCENT	76	-	-	88	-	94	96
RECREATION-WILDERNESS								
RECREATION USE	MILLION RVD's	224.5	228.8	238.7	248.8	258.1	288.3	416.6
WILDERNESS USE	MILLION WFUD	12.7	13.3	14.1	15.4	16.3	18.1	23.8
WILDERNESS MANAGEMENT	MILLION ACRES	33.8	35.0	35.4	37.5	38.0	30.4	38.7
TRAIL CONST/RECONST	MILES	1029.5	1300.5	1473.5	1651.2	1734.4	1709.6	1755.2
TIMBER								
TIMBER OFFERED	BILLION BF	13.3	13.7	13.9	14.6	15.1	15.6	17.4
TIMBER OFFERED	BILLION CF	2.5	2.6	2.6	2.8	2.9	3.0	3.4
FUELWOOD	MILLION CF	268.3	272.9	279.9	293.6	308.5	315.7	253.0
REFORESTATION	THOUSAND ACRES	453.1	470.5	482.7	546.2	549.6	585.6	600.7
TSI	THOUSAND ACRES	434.6	454.8	475.1	513.1	566.0	578.6	632.6
WILDLIFE/FISH								
WILDLIFE AND FISH USE	MILLION USER DAYS	27.2	27.8	28.2	29.5	31.3	34.4	39.1
COMMERCIAL HARVEST ANADROMOUS FISH	MILLION POUNDS	110.1	111.9	113.7	118.1	124.9	137.7	171.9
PROTECTION/SUPPORT								
FIRE MANAGEMENT EFFECTIVENESS INDEX	$/THOUSAND ACRE PROTECTED	1751	1709	1688	1654	1611	1589	1584
TIMBER PURCHASER ROAD CONST/RECONST	MILES	9016.7	9375.5	9739.4	10555.1	11344.0	11897.0	11242.3
ARTERIAL COLLECTOR ROAD CONST/RECONST	MILES	3024.1	3215.5	3336.7	3573.1	3742.3	4084.0	4032.2
HUMAN RESOURCES PROGRAMS	THOUS PERSON YEARS	9.4	9.4	9.4	9.5	9.5	9.4	9.6
COSTS								
OPERATIONAL	MILLION $	1076.6	1101.9	1127.7	1176.4	1225.8	1265.7	1345.7
CAPITAL INVESTMENT	MILLION $	1215.8	1290.6	1382.1	1514.7	1560.4	1579.8	1329.2
TOTAL-NFS	MILLION $	2292.4	2392.5	2509.7	2691.0	2786.2	2845.5	2675.0
ALLOCATED	MILLION $	276.0	302.7	338.6	384.0	406.1	409.3	266.0
APPROPRIATED	MILLION $	2016.4	2089.8	2171.1	2307.0	2380.1	2436.2	2409.0

1/ ABBREVIATIONS: BF = Board Feet, CF = Cubic Feet, AUM = Animal Unit Months, RVD = Recreation Visitor Days, WFUD = Wildlife and Fish User Days, THOUS = Thousand, QUADS = One Quadrillion BTU (British Thermal Unit)

TABLE L.5A -- PROJECTED NATIONAL FOREST SYSTEM PROGRAM OUTPUTS, ACTIVITIES, AND COSTS -- ALTERNATIVE 5 (REDUCED)

INDICATOR	UNIT OF MEASURE 1/	1986	1987	1988	1990	1993	2000	2030
WATER-MINERALS								
INCREASED WATER YIELD	THOUSAND ACRE FEET	404.8	420.4	428.3	441.3	462.6	525.9	587.6
ENERGY MINERALS PRODUCED	QUADS	8.8	8.5	8.3	8.1	7.8	6.3	4.5
NONENERGY MINERALS PROD	MILLION $	1947.0	1956.9	2012.5	1946.1	1882.8	1867.8	1992.5
RANGE								
PERMITTED GRAZING	MILLION AUM	8.6	8.4	8.3	8.1	8.0	7.7	7.2
IMPROVED RANGE ALLOTMENTS	PERCENT	74	-	-	78	-	82	83
RECREATION-WILDERNESS								
RECREATION USE	MILLION RVD's	179.8	179.4	178.8	173.3	171.7	175.7	180.6
WILDERNESS USE	MILLION RVD's	10.7	11.1	11.4	11.7	11.9	12.4	13.9
WILDERNESS MANAGEMENT	MILLION ACRES	32.5	32.5	32.5	32.5	32.5	32.5	32.5
TRAIL CONST/RECONST	MILES	342.5	332.1	334.0	341.7	335.6	342.0	348.3
TIMBER								
TIMBER OFFERED	BILLION BF	8.7	8.6	8.4	8.1	8.1	8.1	8.1
TIMBER OFFERED	BILLION CF	1.6	1.6	1.6	1.5	1.5	1.5	1.6
FUELWOOD	MILLION CF	182.3	181.7	180.8	177.7	178.8	174.7	176.9
REFORESTATION	THOUSAND ACRES	276.0	269.6	265.8	269.0	257.9	257.9	255.4
TSI	THOUSAND ACRES	253.1	245.2	242.2	224.3	230.0	233.8	237.7
WILDLIFE/FISH								
WILDLIFE AND FISH USE	MILLION USER DAYS	22.6	22.5	22.3	21.5	21.1	20.7	19.8
COMMERCIAL HARVEST ANADROMOUS FISH	MILLION POUNDS	104.1	104.1	104.1	104.1	104.1	104.1	104.1
PROTECTION/SUPPORT								
FIRE MANAGEMENT EFFECTIVENESS INDEX	$/THOUSAND ACRE PROTECTED	2158	2163	2171	2183	2182	2179	2177
TIMBER PURCHASER ROAD CONST/RECONST	MILES	6162.0	5973.2	5830.3	5469.6	5431.8	5353.4	5227.0
ARTERIAL COLLECTOR ROAD CONST/RECONST	MILES	1645.5	1600.6	1554.8	1491.4	1498.8	1439.1	1638.8
HUMAN RESOURCES PROGRAMS	THOUS PERSON YEARS	13.5	13.5	13.5	13.5	13.5	13.5	13.5
COSTS								
OPERATIONAL	MILLION $	865.3	857.3	848.1	832.5	836.5	839.2	863.8
CAPITAL INVESTMENT	MILLION $	717.1	700.5	685.3	645.9	642.4	622.4	596.3
TOTAL-NFS	MILLION $	1582.5	1557.8	1533.4	1478.4	1478.8	1461.6	1460.1
ALLOCATED	MILLION $	207.0	195.6	194.4	194.0	189.1	190.5	200.0
APPROPRIATED	MILLION $	1375.5	1362.2	1339.0	1284.4	1289.7	1271.1	1260.1

1/ ABBREVIATIONS: BF = Board Feet, CF = Cubic Feet, AUM = Animal Unit Months, RVD = Recreation Visitor Days, WFUD = Wildlife and Fish User Days, THOUS = Thousand, QUADS = One Quadrillion BTU (British Thermal Unit)

TABLE L.6A -- PROJECTED NATIONAL FOREST SYSTEM PROGRAM OUTPUTS, ACTIVITIES, AND COSTS -- ALTERNATIVE 6 (IMPLEMENT PLANS)

INDICATOR	UNIT OF MEASURE 1/	1986	1987	1988	1990	1993	2000	2030
WATER-MINERALS								
INCREASED WATER YIELD	THOUSAND ACRE FEET	573.9	606.5	634.5	696.2	784.4	979.3	1277.6
ENERGY MINERALS PRODUCED	QUADS	9.3	9.4	9.4	9.6	9.7	11.5	12.7
NONENERGY MINERALS PROD	MILLION $	2106.0	2248.2	2492.4	2615.3	2750.4	3653.9	3911.9
RANGE								
PERMITTED GRAZING	MILLION AUM	10.0	10.0	10.1	10.1	10.2	10.3	10.7
IMPROVED RANGE ALLOTMENTS	PERCENT	76	-	-	89	-	94	96
RECREATION-WILDERNESS								
RECREATION USE	MILLION RVD's	224.5	227.3	234.9	243.8	254.1	283.6	390.7
WILDERNESS USE	MILLION RVD's	13.0	13.6	14.4	15.4	16.2	18.2	24.0
WILDERNESS MANAGEMENT	MILLION ACRES	34.2	34.8	35.0	36.9	36.9	37.6	37.8
TRAIL CONST/RECONST	MILES	1134.6	1286.6	1487.1	1647.4	1793.0	1859.6	1807.2
TIMBER								
TIMBER OFFERED	BILLION BF	11.9	12.2	12.5	12.8	13.2	14.0	15.5
TIMBER OFFERED	BILLION CF	2.2	2.3	2.3	2.4	2.5	2.7	3.1
FUELWOOD	MILLION CF	257.9	264.3	270.2	280.6	292.2	309.9	284.7
REFORESTATION	THOUSAND ACRES	414.7	430.5	449.4	467.0	479.9	505.7	533.1
TSI	THOUSAND ACRES	391.2	435.6	452.3	480.8	505.7	542.1	566.2
WILDLIFE/FISH								
WILDLIFE AND FISH USE	MILLION USER DAYS	26.7	27.2	28.1	29.3	31.2	34.0	39.3
COMMERCIAL HARVEST ANADROMOUS FISH	MILLION POUNDS	109.0	111.4	113.6	120.0	127.6	142.1	178.1
PROTECTION/SUPPORT								
FIRE MANAGEMENT EFFECTIVENESS INDEX	$/THOUSAND ACRE PROTECTED	1735	1699	672	1616	1593	1573	1568
TIMBER PURCHASER ROAD CONST/RECONST	MILES	8914.5	9100.0	9240.2	9627.5	9992.5	10300.8	10440.9
ARTERIAL COLLECTOR ROAD CONST/RECONST	MILES	2940.2	3081.5	3186.7	3369.5	3403.6	3584.5	3521.9
HUMAN RESOURCES PROGRAMS	THOUS PERSON YEARS	9.5	9.5	9.5	9.6	9.6	9.6	9.9
COSTS								
OPERATIONAL	MILLION $	1057.5	1079.1	1114.3	1156.3	1201.0	1255.3	1327.4
CAPITAL INVESTMENT	MILLION $	1174.4	1235.0	1320.8	1416.3	1429.4	1452.4	1240.9
TOTAL-NFS	MILLION $	2231.9	2314.2	2435.2	2572.6	2630.4	2707.7	2568.3
ALLOCATED	MILLION $	266.0	290.3	327.3	370.0	379.0	388.6	245.3
APPROPRIATED	MILLION $	1965.9	2023.8	2107.8	2202.6	2251.4	2319.0	2323.0

1/ ABBREVIATIONS: BF = Board Feet, CF = Cubic Feet, AUM = Animal Unit Months, RVD = Recreation Visitor Days, WFUD = Wildlife and Fish User Days, THOUS = Thousand, QUADS = One Quadrillion BTU (British Thermal Unit)

TABLE L.7A -- PROJECTED NATIONAL FOREST SYSTEM PROGRAM OUTPUTS, ACTIVITIES, AND COSTS -- ALTERNATIVE 7 (HIGH PNV)

INDICATOR	UNIT OF MEASURE 1/	1986	1987	1988	1990	1993	2000	2030
WATER-MINERALS								
INCREASED WATER YIELD	THOUSAND ACRE FEET	605.7	636.0	661.6	715.8	786.0	952.5	1252.5
ENERGY MINERALS PRODUCED	QUADS	9.4	9.4	9.5	9.6	9.8	11.4	12.1
NONENERGY MINERALS PROD	MILLION $	2127.4	2281.5	2504.8	2643.3	2742.0	3672.1	3810.2
RANGE								
PERMITTED GRAZING	MILLION AUM	9.9	9.9	9.9	9.8	9.9	9.8	9.7
IMPROVED RANGE ALLOTMENTS	PERCENT	75	-	-	86	-	91	96
RECREATION-WILDERNESS								
RECREATION USE	MILLION RVD's	224.8	229.1	237.7	244.9	256.4	288.9	417.2
WILDERNESS USE	MILLION RVD's	12.8	13.4	14.1	15.2	16.0	17.7	22.7
WILDERNESS MANAGEMENT	MILLION ACRES	34.2	33.9	34.1	35.0	37.2	38.0	38.9
TRAIL CONST/RECONST	MILES	974.5	1161.7	1259.4	1400.9	1489.1	1489.1	1488.6
TIMBER								
TIMBER OFFERED	BILLION BF	12.2	12.4	12.6	12.9	13.3	13.8	14.6
TIMBER OFFERED	BILLION CF	2.3	2.3	2.4	2.4	2.5	2.6	2.9
FUELWOOD	MILLION CF	264.5	270.2	275.8	282.0	285.5	298.8	291.8
REFORESTATION	THOUSAND ACRES	416.9	424.7	431.9	450.9	458.1	486.9	490.0
TSI	THOUSAND ACRES	379.6	389.2	401.1	421.6	451.6	475.2	517.2
WILDLIFE/FISH								
WILDLIFE AND FISH USE	MILLION USER DAYS	26.6	27.1	27.9	29.1	30.9	33.8	39.3
COMMERCIAL HARVEST ANADROMOUS FISH	MILLION POUNDS	109.1	110.9	112.8	117.7	125.1	139.6	175.5
PROTECTION/SUPPORT								
FIRE MANAGEMENT EFFECTIVENESS INDEX	$/THOUSAND ACRE PROTECTED	1740	1701	1675	1641	1602	1582	1576
TIMBER PURCHASER ROAD CONST/RECONST	MILES	8409.5	8764.5	8854.5	9176.9	9727.5	10039.9	9616.7
ARTERIAL COLLECTOR ROAD CONST/RECONST	MILES	2819.1	2970.2	3110.6	3253.7	3329.5	3326.0	3256.9
HUMAN RESOURCES PROGRAMS	THOUS PERSON YEARS	8.9	8.9	8.9	8.9	9.0	8.9	9.0
COSTS								
OPERATIONAL	MILLION $	1042.3	1063.9	1082.9	1118.9	1155.5	1208.2	1272.0
CAPITAL INVESTMENT	MILLION $	1133.6	1188.5	1253.8	1343.3	1370.7	1376.5	1142.4
TOTAL-NFS	MILLION $	2175.9	2252.4	2336.8	2462.2	2526.2	2584.7	2414.4
ALLOCATED	MILLION $	268.0	290.7	324.6	367.2	376.9	384.4	237.4
APPROPRIATED	MILLION $	1907.9	1961.7	2012.1	2095.0	2149.3	2200.2	2177.0

1/ ABBREVIATIONS: BF = Board Feet, CF = Cubic Feet, AUM = Animal Unit Months, RVD = Recreation Visitor Days, WFUD = Wildlife and Fish User Days, THOUS = Thousand, QUADS = One Quadrillion BTU (British Thermal Unit)

TABLE L.8A -- PROJECTED NATIONAL FOREST SYSTEM PROGRAM OUTPUTS, ACTIVITIES, AND COSTS -- ALTERNATIVE 8 (1980 RPA)

INDICATOR	UNIT OF MEASURE 1/	1986	1987	1988	1990	1993	2000	2030
WATER-MINERALS								
INCREASED WATER YIELD	THOUSAND ACRE FEET	684.7	713.3	739.5	793.5	874.8	1047.3	1338.7
ENERGY MINERALS PRODUCED	QUADS	9.4	9.4	9.5	9.6	9.8	11.5	12.6
NONENERGY MINERALS PROD	MILLION $	2073.2	2245.4	2409.6	2548.3	2667.9	3726.1	3757.9
RANGE								
PERMITTED GRAZING	MILLION AUM	10.0	10.0	10.2	10.2	10.3	10.5	10.9
IMPROVED RANGE ALLOTMENTS	PERCENT	76	*	*	89	*	*	96
RECREATION-WILDERNESS								
RECREATION USE	MILLION RVD's	230.1	235.6	244.6	251.3	262.8	290.8	387.2
WILDERNESS USE	MILLION RVD's	12.3	12.9	13.6	14.5	15.2	16.7	20.8
WILDERNESS MANAGEMENT	MILLION ACRES	36.8	37.5	38.2	39.0	39.4	40.4	40.9
TRAIL CONST/RECONST	MILES	1139.2	1368.1	1611.7	1833.2	1865.6	1826.6	1707.7
TIMBER								
TIMBER OFFERED	BILLION BF	12.4	12.6	12.7	13.1	13.3	14.0	15.4
TIMBER OFFERED	BILLION CF	2.3	2.4	2.4	2.5	2.5	2.7	3.0
FUELWOOD	MILLION CF	264.1	272.9	279.7	288.6	295.5	311.6	292.0
REFORESTATION	THOUSAND ACRES	435.3	444.0	456.0	470.8	479.5	510.8	507.6
TSI	THOUSAND ACRES	415.7	428.2	441.7	462.8	492.1	531.3	586.2
WILDLIFE/FISH								
WILDLIFE AND FISH USE	MILLION USER DAYS	26.7	27.4	28.4	29.1	31.8	35.2	40.5
COMMERCIAL HARVEST ANADROMOUS FISH	MILLION POUNDS	106.6	108.4	110.4	115.1	122.2	138.6	194.7
PROTECTION/SUPPORT								
FIRE MANAGEMENT EFFECTIVENESS INDEX	$/THOUSAND ACRE PROTECTED	1762	1707	1674	1633	1600	1580	1575
TIMBER PURCHASER ROAD CONST/RECONST	MILES	8818.7	9084.0	9221.6	9559.7	9732.6	10063.5	10077.6
ARTERIAL COLLECTOR ROAD CONST/RECONST	MILES	2850.2	3021.4	3176.2	3337.8	3477.8	3666.1	3542.5
HUMAN RESOURCES PROGRAMS	THOUS PERSON YEARS	9.6	9.3	9.1	8.9	8.7	8.6	8.8
COSTS								
OPERATIONAL	MILLION $	1076.1	1100.5	1131.4	1170.2	1212.1	1264.6	1336.9
CAPITAL INVESTMENT	MILLION $	1190.5	1251.0	1332.6	1430.0	1430.9	1453.9	1226.0
TOTAL-NFS	MILLION $	2266.7	2351.5	2464.0	2600.2	2643.0	2718.6	2562.9
ALLOCATED	MILLION $	280.0	300.1	333.2	392.0	377.4	390.0	239.0
APPROPRIATED	MILLION $	1986.7	2051.4	2130.8	2208.2	2265.5	2328.5	2323.9

1/ ABBREVIATIONS: BF = Board Feet, CF = Cubic Feet, AUM = Animal Unit Months, RVD = Recreation Visitor Days, WFUD = Wildlife and Fish User Days, THOUS = Thousand, QUADS = One Quadrillion BTU (British Thermal Unit)

TABLE L.9A -- PROJECTED NATIONAL FOREST SYSTEM PROGRAM OUTPUTS, ACTIVITIES, AND COSTS -- ALTERNATIVE 9 (HIGH PRODUCTIVITY)

INDICATOR	UNIT OF MEASURE 1/	1986	1987	1988	1990	1993	2000	2030
WATER-MINERALS								
INCREASED WATER YIELD	THOUSAND ACRE FEET	657.9	697.3	728.0	926.2	1065.9	1276.3	2111.5
ENERGY MINERALS PRODUCED	QUADS	9.5	9.6	9.9	10.2	10.4	11.7	14.4
NONENERGY MINERALS PROD	MILLION $	2207.7	2369.9	2611.1	2685.7	2763.9	3860.9	3991.6
RANGE								
PERMITTED GRAZING	MILLION AUM	10.2	10.3	10.5	10.7	10.9	11.2	12.2
IMPROVED RANGE ALLOTMENTS	PERCENT	76	-	-	91	-	94	96
RECREATION-WILDERNESS								
RECREATION USE	MILLION RVD's	214.1	218.0	225.3	232.9	243.8	283.9	415.1
WILDERNESS USE	MILLION RVD's	12.0	12.6	13.8	13.9	14.5	16.2	21.8
WILDERNESS MANAGEMENT	MILLION ACRES	33.0	33.0	33.0	33.0	34.4	34.4	34.5
TRAIL CONST/RECONST	MILES	1069.1	1198.2	1369.5	1382.8	1428.4	1483.1	1534.7
TIMBER								
TIMBER OFFERED	BILLION BF	13.6	14.3	14.7	15.9	16.6	19.9	21.8
TIMBER OFFERED	BILLION CF	2.5	2.7	2.7	3.0	3.2	3.8	4.3
FUELWOOD	MILLION CF	250.1	255.0	261.7	274.6	292.2	314.1	300.6
REFORESTATION	THOUSAND ACRES	458.3	495.9	524.6	597.7	647.6	780.1	811.2
TSI	THOUSAND ACRES	480.3	507.0	541.4	603.4	666.5	836.6	906.2
WILDLIFE/FISH								
WILDLIFE AND FISH USE	MILLION USER DAYS	26.6	27.5	28.6	28.4	29.4	32.2	38.3
COMMERCIAL HARVEST ANADROMOUS FISH	MILLION POUNDS	109.3	111.1	113.3	117.8	125.6	140.5	174.6
PROTECTION/SUPPORT								
FIRE MANAGEMENT EFFECTIVENESS INDEX	$/THOUSAND ACRE PROTECTED	1721	1687	1655	1610	1592	1568	1567
TIMBER PURCHASER ROAD CONST/RECONST	MILES	8811.7	9147.7	9630.7	10704.3	11320.7	12134.0	11993.3
ARTERIAL COLLECTOR ROAD CONST/RECONST	MILES	3250.0	3444.7	3557.7	3859.8	3997.0	4220.4	4162.3
HUMAN RESOURCES PROGRAMS	THOUS PERSON YEARS	8.8	8.8	8.6	8.6	8.6	8.5	8.7
COSTS								
OPERATIONAL	MILLION $	1072.8	1104.5	1137.9	1218.2	1289.6	1443.6	1491.4
CAPITAL INVESTMENT	MILLION $	1238.0	1314.6	1409.0	1541.4	1584.3	1781.5	1531.6
TOTAL-NFS	MILLION $	2310.8	2419.1	2546.9	2759.6	2873.9	3225.1	3023.0
ALLOCATED	MILLION $	276.0	303.9	343.0	403.0	423.3	491.1	329.0
APPROPRIATED	MILLION $	2034.8	2115.2	2203.9	2356.6	2450.6	2734.0	2694.0

1/ ABBREVIATIONS: BF = Board Feet, CF = Cubic Feet, AUM = Animal Unit Months, RVD = Recreation Visitor Days, WFUD = Wildlife and Fish User Days, THOUS = Thousand, QUADS = One Quadrillion BTU (British Thermal Unit)

TABLE L.LB -- PROJECTED STATE AND PRIVATE FORESTRY PROGRAM OUTPUTS, ACTIVITIES, AND COSTS -- LOW BOUND RECOMMENDED PROGRAM

INDICATOR	UNIT OF MEASURE	1986	1987	1988	1990	1993	2000	2030
WATER								
IMPROVED WATERSHED CONDITION	THOUSAND ACRES	7	6	6	6	135	287	328
TIMBER								
MANAGEMENT PLANS	THOUSAND ACRES	2817	2192	2192	2192	4879	6968	7736
DISPERSED RECREATION	THOUSAND ACRES	82	60	60	60	160	378	386
WILDLIFE HABITAT IMPROVEMENT	THOUSAND ACRES	154	116	116	116	352	448	556
MAINTAINED WATERSHED CONDITION	THOUSAND ACRES	437	350	350	350	2079	3920	4094
REFORESTATION (RFA, FIP, ACP)	THOUSAND ACRES	403	323	323	323	919	966	1061
TIMBER STAND IMPROVEMENT (RFA, FIP, ACP)	THOUSAND ACRES	195	156	156	156	512	564	633
IMPROVED WOOD UTILIZATION	MILLION CUBIC FEET	88	64	64	64	166	239	250
PROGRAM DEVELOPMENT AND MANAGEMENT DEVELOPMENT								
STATE FOREST RESOURCE PLANNING	PERSON YEARS	55	44	44	44	73	145	129
FOREST PEST MANAGEMENT								
FPM-SURVEY & TECHNICAL ASSISTANCE (S&PF LANDS)	MILLION ACRES	411	35	35	35	357	415	438
FPM-SURVEYS ON NFS AND OTHER FEDERAL LANDS	MILLION ACRES	144	135	135	135	169	177	185
COOPERATIVE FIRE PROTECTION								
PROTECTION COST PLUS LOSS	$ PER ACRE	.89	.89	.88	.87	.87	.87	.87
COSTS								
OPERATIONAL	MILLION $	12	5	5	5	8	13	15
CAPITAL INVESTMENT	MILLION $	58	17	17	17	45	62	71
TOTAL-S&PF	MILLION $	70	22	22	22	53	75	86
ALLOCATED 1/	MILLION $	22	0	0	0	22	22	22
APPROPRIATED	MILLION $	48	22	22	22	31	53	64

1/ Includes FIP, ACP, and RCFP, all of which are capital Investment.

ABBREVIATIONS: RFA = Rural Forestry Assistance, FIP = Forestry Incentives Program, ACP = Agricultural Conservation Program, NFS = National Forest System, RCFP = Rural Community Fire Protection

TABLE L.HB -- PROJECTED STATE AND PRIVATE FORESTRY PROGRAM OUTPUTS, ACTIVITIES, AND COSTS -- HIGH BOUND RECOMMENDED PROGRAM

INDICATOR	UNIT OF MEASURE	1986	1987	1988	1990	1993	2000	2030
WATER								
IMPROVED WATERSHED CONDITION	THOUSAND ACRES	7	6	99	116	135	287	328
TIMBER								
MANAGEMENT PLANS	THOUSAND ACRES	2817	2192	4195	4488	4879	6968	7736
DISPERSED RECREATION	THOUSAND ACRES	82	60	124	146	160	378	386
WILDLIFE HABITAT IMPROVEMENT	THOUSAND ACRES	154	116	267	322	352	448	556
MAINTAINED WATERSHED CONDITION	THOUSAND ACRES	437	350	961	1956	2079	3920	4094
REFORESTATION (RFA, FIP, ACP)	THOUSAND ACRES	403	323	697	866	919	966	1061
TIMBER STAND IMPROVEMENT (RFA, FIP, ACP)	THOUSAND ACRES	195	156	373	438	512	564	633
IMPROVED WOOD UTILIZATION	MILLION CUBIC FEET	88	64	133	145	166	239	250
PROGRAM DEVELOPMENT AND MANAGEMENT DEVELOPMENT								
STATE FOREST RESOURCE PLANNING	PERSON YEARS	55	44	46	51	73	145	129
FOREST PEST MANAGEMENT								
FPM-SURVEY & TECHNICAL ASSISTANCE (S&PF LANDS)	MILLION ACRES	411	35	312	326	357	415	438
FPM-SURVEYS ON NFS AND OTHER FEDERAL LANDS	MILLION ACRES	144	135	154	161	169	177	185
COOPERATIVE FIRE PROTECTION								
PROTECTION COST PLUS LOSS	$ PER ACRE	.89	.89	.87	.87	.87	.87	.87
COSTS								
OPERATIONAL	MILLION $	12	5	13	12	15	18	16
CAPITAL INVESTMENT	MILLION $	58	17	98	109	124	150	163
TOTAL-S&PF	MILLION $	70	22	111	121	139	168	179
ALLOCATED 1/	MILLION $	22	0	43	47	50	52	65
APPROPRIATED	MILLION $	48	22	68	74	89	116	114

1/ Includes FIP, ACP, and RCFP, all of which are capital Investment.

ABBREVIATIONS: RFA = Rural Forestry Assistance, FIP = Forestry Incentives Program, ACP = Agricultural Conservation Program, NFS = National Forest System, RCFP = Rural Community Fire Protection

TABLE L.1B -- PROJECTED STATE AND PRIVATE FORESTRY PROGRAM OUTPUTS, ACTIVITIES, AND COSTS -- ALTERNATIVE 1 (CONSTANT)

INDICATOR	UNIT OF MEASURE	1986	1987	1988	1990	1993	2000	2030
WATER								
IMPROVED WATERSHED CONDITION	THOUSAND ACRES	25	22	22	23	22	23	25
TIMBER								
MANAGEMENT PLANS	THOUSAND ACRES	4371	4416	4389	4354	4206	4155	4098
DISPERSED RECREATION	THOUSAND ACRES	115	116	116	116	115	115	115
WILDLIFE HABITAT IMPROVEMENT	THOUSAND ACRES	236	237	237	236	234	234	234
MAINTAINED WATERSHED CONDITION	THOUSAND ACRES	1428	1430	1430	1429	1422	1420	1420
REFORESTATION (RFA, FIP, ACP)	THOUSAND ACRES	403	398	403	403	403	402	402
TIMBER STAND IMPROVEMENT (RFA, FIP, ACP)	THOUSAND ACRES	195	195	195	196	196	196	197
IMPROVED WOOD UTILIZATION	MILLION CUBIC FEET	130	130	130	132	131	131	132
PROGRAM DEVELOPMENT AND MANAGEMENT DEVELOPMENT								
STATE FOREST RESOURCE PLANNING	PERSON YEARS	80	81	80	80	80	81	81
FOREST PEST MANAGEMENT								
FPM-SURVEY & TECHNICAL ASSISTANCE (S&PF LANDS)	MILLION ACRES	355	356	355	355	355	355	361
FPM-SURVEYS ON NFS AND OTHER FEDERAL LANDS	MILLION ACRES	129	129	127	127	127	127	127
COOPERATIVE FIRE PROTECTION								
PROTECTION COST PLUS LOSS	$ PER ACRE	.89	.80	.71	.70	.70	.70	.70
COSTS								
OPERATIONAL	MILLION $	10	10	10	10	10	10	10
CAPITAL INVESTMENT	MILLION $	80	80	79	79	79	79	79
TOTAL-S&PF	MILLION $	90	90	90	90	90	90	90
ALLOCATED 1/	MILLION $	22	22	22	22	22	22	22
APPROPRIATED	MILLION $	68	68	68	68	68	68	68

1/* Includes FIP, ACP, and RCFP, all of which are capital Investment.

ABBREVIATIONS: RFA = Rural Forestry Assistance, FIP = Forestry Incentives Program, ACP = Agricultural Conservation Program, NFS = National Forest System, RCFP = Rural Community Fire Protection

TABLE L.2B -- PROJECTED STATE AND PRIVATE FORESTRY PROGRAM OUTPUTS, ACTIVITIES, AND COSTS -- ALTERNATIVE 2 (MARKET)

INDICATOR	UNIT OF MEASURE	1986	1987	1988	1990	1993	2000	2030
WATER								
IMPROVED WATERSHED CONDITION	THOUSAND ACRES	44	86	122	381	378	451	464
TIMBER								
MANAGEMENT PLANS	THOUSAND ACRES	4770	6347	7989	10376	10699	11714	12705
DISPERSED RECREATION	THOUSAND ACRES	391	544	716	843	847	884	888
WILDLIFE HABITAT IMPROVEMENT	THOUSAND ACRES	300	419	544	692	717	761	847
MAINTAINED WATERSHED CONDITION	THOUSAND ACRES	1356	1937	2575	5252	5286	5683	5855
REFORESTATION (RFA, FIP, ACP)	THOUSAND ACRES	766	898	1017	1291	1316	1349	1380
TIMBER STAND IMPROVEMENT (RFA, FIP, ACP)	THOUSAND ACRES	577	669	760	1001	1032	1081	1114
IMPROVED WOOD UTILIZATION	MILLION CUBIC FEET	136	155	188	292	295	313	324
PROGRAM DEVELOPMENT AND MANAGEMENT DEVELOPMENT								
STATE FOREST RESOURCE PLANNING	PERSON YEARS	99	124	136	183	188	189	191
FOREST PEST MANAGEMENT								
FPM-SURVEY & TECHNICAL ASSISTANCE (S&PF LANDS)	MILLION ACRES	429	456	480	512	537	555	585
FPM-SURVEYS ON NFS AND OTHER FEDERAL LANDS	MILLION ACRES	144	154	159	182	185	188	192
COOPERATIVE FIRE PROTECTION								
PROTECTION COST PLUS LOSS	$ PER ACRE	.89	.88	.88	.87	.87	.87	.87
COSTS								
OPERATIONAL	MILLION $	14	19	24	29	31	36	34
CAPITAL INVESTMENT	MILLION $	134	155	181	225	235	250	249
TOTAL-S&PF	MILLION $	148	174	205	255	266	286	283
ALLOCATED 1/	MILLION $	63	64	69	76	77	79	80
APPROPRIATED	MILLION $	85	110	136	179	189	207	203

1/ Includes FIP, ACP, and RCFP, all of which are capital Investment.

ABBREVIATIONS: RFA = Rural Forestry Assistance, FIP = Forestry Incentives Program, ACP = Agricultural Conservation Program, NFS = National Forest System, RCFP = Rural Community Fire Protection

TABLE L.3B -- PROJECTED STATE AND PRIVATE FORESTRY PROGRAM OUTPUTS, ACTIVITIES, AND COSTS -- ALTERNATIVE 3 (NONMARKET) AND ALTERNATIVE 3A (HIGH WILDERNESS)

INDICATOR	UNIT OF MEASURE	1986	1987	1988	1990	1993	2000	2030
WATER								
IMPROVED WATERSHED CONDITION	THOUSAND ACRES	98	98	98	96	95	96	100
TIMBER								
MANAGEMENT PLANS	THOUSAND ACRES	3389	4150	4312	4495	4804	5379	6301
DISPERSED RECREATION	THOUSAND ACRES	119	128	129	164	177	196	224
WILDLIFE HABITAT IMPROVEMENT	THOUSAND ACRES	357	436	532	609	625	644	730
MAINTAINED WATERSHED CONDITION	THOUSAND ACRES	1317	1424	1921	2109	2113	2139	2189
REFORESTATION (RFA, FIP, ACP)	THOUSAND ACRES	601	608	618	637	649	664	779
TIMBER STAND IMPROVEMENT (RFA, FIP, ACP)	THOUSAND ACRES	387	415	442	493	526	586	712
IMPROVED WOOD UTILIZATION	MILLION CUBIC FEET	124	126	130	172	194	210	217
PROGRAM DEVELOPMENT AND MANAGEMENT DEVELOPMENT								
STATE FOREST RESOURCE PLANNING	PERSON YEARS	80	97	111	149	135	123	75
FOREST PEST MANAGEMENT								
FPM-SURVEY & TECHNICAL ASSISTANCE (S&PF LANDS)	MILLION ACRES	362	370	399	438	452	454	464
FPM-SURVEYS ON NFS AND OTHER FEDERAL LANDS	MILLION ACRES	131	133	135	135	137	140	142
COOPERATIVE FIRE PROTECTION								
PROTECTION COST PLUS LOSS	$ PER ACRE	.89	.84	.79	.78	.78	.78	.78
COSTS								
OPERATIONAL	MILLION $	12	12	13	14	14	15	15
CAPITAL INVESTMENT	MILLION $	106	117	128	144	147	151	155
TOTAL-S&PF	MILLION $	118	129	141	158	162	166	170
ALLOCATED 1/	MILLION $	45	47	48	50	51	54	55
APPROPRIATED	MILLION $	73	83	93	108	111	112	115

1/ Includes FIP, ACP, and RCFP, all of which are capital Investment.

ABBREVIATIONS: RFA = Rural Forestry Assistance, FIP = Forestry Incentives Program, ACP = Agricultural Conservation Program, NFS = National Forest System, RCFP = Rural Community Fire Protection

TABLE L.4B -- PROJECTED STATE AND PRIVATE FORESTRY PROGRAM OUTPUTS, ACTIVITIES, AND COSTS -- ALTERNATIVE 4 (ALL RESOURCES)

INDICATOR	UNIT OF MEASURE	1986	1987	1988	1990	1993	2000	2030
WATER								
IMPROVED WATERSHED CONDITION	THOUSAND ACRES	84	91	102	152	203	260	203
TIMBER								
MANAGEMENT PLANS	THOUSAND ACRES	3836	4167	4546	5173	5444	5864	8102
DISPERSED RECREATION	THOUSAND ACRES	127	152	184	280	382	431	514
WILDLIFE HABITAT IMPROVEMENT	THOUSAND ACRES	343	570	837	1228	1473	1494	1661
MAINTAINED WATERSHED CONDITION	THOUSAND ACRES	2062	2288	2483	3928	3935	4228	4362
REFORESTATION (RFA, FIP, ACP)	THOUSAND ACRES	769	787	807	852	873	904	1134
TIMBER STAND IMPROVEMENT (RFA, FIP, ACP)	THOUSAND ACRES	484	533	580	693	762	840	1042
IMPROVED WOOD UTILIZATION	MILLION CUBIC FEET	126	131	153	226	247	251	272
PROGRAM DEVELOPMENT AND MANAGEMENT DEVELOPMENT								
STATE FOREST RESOURCE PLANNING	PERSON YEARS	86	113	136	221	204	172	76
FOREST PEST MANAGEMENT								
FPM-SURVEY & TECHNICAL ASSISTANCE (S&PF LANDS)	MILLION ACRES	393	404	455	495	504	513	528
FPM-SURVEYS ON NFS AND OTHER FEDERAL LANDS	MILLION ACRES	133	139	134	148	152	158	157
COOPERATIVE FIRE PROTECTION								
PROTECTION COST PLUS LOSS	$ PER ACRE	.89	.88	.88	.87	.87	.87	.87
COSTS								
OPERATIONAL	MILLION $	12	14	15	18	18	18	18
CAPITAL INVESTMENT	MILLION $	133	149	170	206	214	218	223
TOTAL-S&PF	MILLION $	145	163	185	223	232	236	241
ALLOCATED 1/	MILLION $	66	69	71	76	80	82	83
APPROPRIATED	MILLION $	78	94	114	147	152	154	159

1/ Includes FIP, ACP, and RCFP, all of which are capital Investment.

ABBREVIATIONS: RFA = Rural Forestry Assistance, FIP = Forestry Incentives Program, ACP = Agricultural Conservation Program, NFS = National Forest System, RCFP = Rural Community Fire Protection

TABLE L.5B -- PROJECTED STATE AND PRIVATE FORESTRY PROGRAM OUTPUTS, ACTIVITIES, AND COSTS -- ALTERNATIVE 5 (REDUCED)

INDICATOR	UNIT OF MEASURE	1986	1987	1988	1990	1993	2000	2030
WATER								
IMPROVED WATERSHED CONDITION	THOUSAND ACRES	10	8	8	8	8	9	10
TIMBER								
MANAGEMENT PLANS	THOUSAND ACRES	3113	3147	3127	3100	2989	2951	2908
DISPERSED RECREATION	THOUSAND ACRES	85	86	86	86	85	85	85
WILDLIFE HABITAT IMPROVEMENT	THOUSAND ACRES	171	171	171	171	169	168	169
MAINTAINED WATERSHED CONDITION	THOUSAND ACRES	739	740	740	739	734	733	732
REFORESTATION (RFA, FIP, ACP)	THOUSAND ACRES	293	293	293	293	292	292	292
TIMBER STAND IMPROVEMENT (RFA, FIP, ACP)	THOUSAND ACRES	142	142	142	142	143	143	143
IMPROVED WOOD UTILIZATION	MILLION CUBIC FEET	94	94	94	94	94	94	95
PROGRAM DEVELOPMENT AND MANAGEMENT DEVELOPMENT								
STATE FOREST RESOURCE PLANNING	PERSON YEARS	61	61	61	61	61	61	61
FOREST PEST MANAGEMENT								
FPM-SURVEY & TECHNICAL ASSISTANCE (S&PF LANDS)	MILLION ACRES	232	231	231	231	231	231	231
FPM-SURVEYS ON NFS AND OTHER FEDERAL LANDS	MILLION ACRES	91	91	91	91	91	91	91
COOPERATIVE FIRE PROTECTION								
PROTECTION COST PLUS LOSS	$ PER ACRE	.89	.80	.71	.70	.70	.70	.70
COSTS								
OPERATIONAL	MILLION $	8	8	8	8	8	8	8
CAPITAL INVESTMENT	MILLION $	60	60	60	60	60	60	60
TOTAL-S&PF	MILLION $	68	68	68	68	68	68	68
ALLOCATED 1/	MILLION $	17	17	17	17	17	17	17
APPROPRIATED	MILLION $	52	52	52	52	52	52	52

1/ Includes FIP, ACP, and RCFP, all of which are capital Investment.

ABBREVIATIONS: RFA = Rural Forestry Assistance, FIP = Forestry Incentives Program, ACP = Agricultural Conservation Program, NFS = National Forest System, RCFP = Rural Community Fire Protection

TABLE L.6B -- PROJECTED STATE AND PRIVATE FORESTRY PROGRAM OUTPUTS, ACTIVITIES, AND COSTS -- ALTERNATIVE 6 (IMPLEMENT PLANS)

INDICATOR	UNIT OF MEASURE	1986	1987	1988	1990	1993	2000	2030
WATER								
IMPROVED WATERSHED CONDITION	THOUSAND ACRES	98	114	146	312	233	324	365
TIMBER								
MANAGEMENT PLANS	THOUSAND ACRES	4174	4718	5300	6354	6574	7297	8114
DISPERSED RECREATION	THOUSAND ACRES	185	233	278	363	368	391	398
WILDLIFE HABITAT IMPROVEMENT	THOUSAND ACRES	240	297	352	442	464	496	584
MAINTAINED WATERSHED CONDITION	THOUSAND ACRES	1857	2190	2511	4265	4308	4634	5508
REFORESTATION (RFA, FIP, ACP)	THOUSAND ACRES	729	795	851	954	979	1018	1061
TIMBER STAND IMPROVEMENT (RFA, FIP, ACP)	THOUSAND ACRES	417	441	456	509	537	582	633
IMPROVED WOOD UTILIZATION	MILLION CUBIC FEET	135	150	159	223	231	254	261
PROGRAM DEVELOPMENT AND MANAGEMENT DEVELOPMENT								
STATE FOREST RESOURCE PLANNING	PERSON YEARS	94	112	130	147	157	161	165
FOREST PEST MANAGEMENT								
FPM-SURVEY & TECHNICAL ASSISTANCE (S&PF LANDS)	MILLION ACRES	411	428	465	517	526	536	563
FPM-SURVEYS ON NFS AND OTHER FEDERAL LANDS	MILLION ACRES	139	146	144	158	158	161	167
COOPERATIVE FIRE PROTECTION								
PROTECTION COST PLUS LOSS	$ PER ACRE	.89	.88	.88	.87	.87	.87	.87
COSTS								
OPERATIONAL	MILLION $	14	19	23	29	29	30	29
CAPITAL INVESTMENT	MILLION $	105	120	138	178	182	221	239
TOTAL-S&PF	MILLION $	119	139	161	207	210	251	268
ALLOCATED 1/	MILLION $	39	40	45	49	51	52	65
APPROPRIATED	MILLION $	80	98	117	157	160	199	203

/ Includes FIP, ACP, and RCFP, all of which are capital Investment.

ABBREVIATIONS: RFA = Rural Forestry Assistance, FIP = Forestry Incentives Program, ACP = Agricultural Conservation Program, NFS = National Forest System, RCFP = Rural Community Fire Protection

TABLE L.7B -- PROJECTED STATE AND PRIVATE FORESTRY PROGRAM OUTPUTS, ACTIVITIES, AND COSTS -- ALTERNATIVE 7 (HIGH PNV)

INDICATOR	UNIT OF MEASURE	1986	1987	1988	1990	1993	2000	2030
WATER								
IMPROVED WATERSHED CONDITION	THOUSAND ACRES	113	120	142	265	184	271	312
TIMBER								
MANAGEMENT PLANS	THOUSAND ACRES	5053	5968	6794	7943	7951	8603	9082
DISPERSED RECREATION	THOUSAND ACRES	338	473	607	746	749	786	787
WILDLIFE HABITAT IMPROVEMENT	THOUSAND ACRES	271	353	433	536	554	597	679
MAINTAINED WATERSHED CONDITION	THOUSAND ACRES	1885	2366	2839	4737	4747	5131	5256
REFORESTATION (RFA, FIP, ACP)	THOUSAND ACRES	604	704	793	1005	1029	1071	1108
TIMBER STAND IMPROVEMENT (RFA, FIP, ACP)	THOUSAND ACRES	438	469	498	609	635	679	719
IMPROVED WOOD UTILIZATION	MILLION CUBIC FEET	139	157	179	247	251	265	270
PROGRAM DEVELOPMENT AND MANAGEMENT DEVELOPMENT								
STATE FOREST RESOURCE PLANNING	PERSON YEARS	88	107	121	150	155	155	157
FOREST PEST MANAGEMENT								
FPM-SURVEY & TECHNICAL ASSISTANCE (S&PF LANDS)	MILLION ACRES	390	406	418	441	450	452	460
FPM-SURVEYS ON NFS AND OTHER FEDERAL LANDS	MILLION ACRES	133	140	138	153	155	156	162
COOPERATIVE FIRE PROTECTION								
PROTECTION COST PLUS LOSS	$ PER ACRE	.89	.80	.71	.71	.70	.70	.70
COSTS								
OPERATIONAL	MILLION $	12	14	15	14	15	15	15
CAPITAL INVESTMENT	MILLION $	105	117	129	153	156	169	183
TOTAL-S&PF	MILLION $	117	131	144	167	171	185	198
ALLOCATED 1/	MILLION $	42	43	43	48	49	51	67
APPROPRIATED	MILLION $	75	88	100	119	122	134	131

1/ Includes FIP, ACP, and RCFP, all of which are capital Investment.

ABBREVIATIONS: RFA = Rural Forestry Assistance, FIP = Forestry Incentives Program, ACP = Agricultural Conservation Program, NFS = National Forest System, RCFP = Rural Community Fire Protection

TABLE L.8B -- PROJECTED STATE AND PRIVATE FORESTRY PROGRAM OUTPUTS, ACTIVITIES, AND COSTS -- ALTERNATIVE 8 (1980 RPA)

INDICATOR	UNIT OF MEASURE	1986	1987	1988	1990	1993	2000	2030
WATER								
IMPROVED WATERSHED CONDITION	THOUSAND ACRES	84	91	102	152	203	260	203
TIMBER								
MANAGEMENT PLANS	THOUSAND ACRES	3836	4167	4546	5173	5444	5864	8102
DISPERSED RECREATION	THOUSAND ACRES	127	152	184	280	382	431	514
WILDLIFE HABITAT IMPROVEMENT	THOUSAND ACRES	343	570	837	1228	1473	1494	1661
MAINTAINED WATERSHED CONDITION	THOUSAND ACRES	2062	2288	2483	3928	3935	4228	4362
REFORESTATION (RFA, FIP, ACP)	THOUSAND ACRES	769	787	807	852	873	904	1134
TIMBER STAND IMPROVEMENT (RFA, FIP, ACP)	THOUSAND ACRES	485	533	580	693	762	840	1042
IMPROVED WOOD UTILIZATION	MILLION CUBIC FEET	126	131	153	226	247	251	272
PROGRAM DEVELOPMENT AND MANAGEMENT DEVELOPMENT								
STATE FOREST RESOURCE PLANNING	PERSON YEARS	86	113	136	221	204	172	76
FOREST PEST MANAGEMENT								
FPM-SURVEY & TECHNICAL ASSISTANCE (S&PF LANDS)	MILLION ACRES	393	404	455	495	504	513	529
FPM-SURVEYS ON NFS AND OTHER FEDERAL LANDS	MILLION ACRES	130	136	135	148	152	156	158
COOPERATIVE FIRE PROTECTION								
PROTECTION COST PLUS LOSS	$ PER ACRE	.89	.88	.88	.87	.87	.87	.87
COSTS								
OPERATIONAL	MILLION $	12	14	15	18	18	18	18
CAPITAL INVESTMENT	MILLION $	130	147	169	206	214	218	223
TOTAL-S&PF	MILLION $	142	161	184	224	232	236	241
ALLOCATED 1/	MILLION $	66	69	71	76	80	82	83
APPROPRIATED	MILLION $	76	92	113	148	152	154	159

1/ Includes FIP, ACP, and RCFP, all of which are capital Investment.

ABBREVIATIONS: RFA = Rural Forestry Assistance, FIP = Forestry Incentives Program, ACP = Agricultural Conservation Program, NFS = National Forest System, RCFP = Rural Community Fire Protection

TABLE L.9B -- PROJECTED STATE AND PRIVATE FORESTRY PROGRAM OUTPUTS, ACTIVITIES, AND COSTS -- ALTERNATIVE 9 (HIGH PRODUCTIVITY)

INDICATOR	UNIT OF MEASURE	1986	1987	1988	1990	1993	2000	2030
WATER								
IMPROVED WATERSHED CONDITION	THOUSAND ACRES	113	120	142	265	184	271	312
TIMBER								
MANAGEMENT PLANS	THOUSAND ACRES	5053	5968	6794	7943	7951	8603	9082
DISPERSED RECREATION	THOUSAND ACRES	338	473	607	746	754	786	787
WILDLIFE HABITAT IMPROVEMENT	THOUSAND ACRES	271	353	433	536	554	597	679
MAINTAINED WATERSHED CONDITION	THOUSAND ACRES	1885	2366	2839	4737	4754	5131	5356
REFORESTATION (RFA, FIP, ACP)	THOUSAND ACRES	604	703	793	1005	1029	1071	1108
TIMBER STAND IMPROVEMENT (RFA, FIP, ACP)	THOUSAND ACRES	438	469	498	609	625	679	719
IMPROVED WOOD UTILIZATION	MILLION CUBIC FEET	139	157	179	247	251	265	270
PROGRAM DEVELOPMENT AND MANAGEMENT DEVELOPMENT								
STATE FOREST RESOURCE PLANNING	PERSON YEARS	88	107	121	150	155	155	157
FOREST PEST MANAGEMENT								
FPM-SURVEY & TECHNICAL ASSISTANCE (S&PF LANDS)	MILLION ACRES	390	406	418	441	450	452	460
FPM-SURVEYS ON NFS AND OTHER FEDERAL LANDS	MILLION ACRES	142	150	152	170	175	180	185
COOPERATIVE FIRE PROTECTION								
PROTECTION COST PLUS LOSS	$ PER ACRE	.89	.80	.71	.71	.70	.70	.70
COSTS								
OPERATIONAL	MILLION $	13	15	17	18	19	20	17
CAPITAL INVESTMENT	MILLION $	109	122	134	159	162	176	190
TOTAL-S&PF	MILLION $	121	137	151	177	181	196	207
ALLOCATED 1/	MILLION $	42	43	43	48	49	51	67
APPROPRIATED	MILLION $	89	94	108	129	132	145	140

1/ Includes FIP, ACP, and RCFP, all of which are capital Investment.

ABBREVIATIONS: RFA = Rural Forestry Assistance, FIP = Forestry Incentives Program, ACP = Agricultural Conservation Program, NFS = National Forest System, RCFP = Rural Community Fire Protection

TABLE L.LC--PROJECTED RESEARCH PROGRAM COSTS -- LOW BOUND RECOMMENDED PROGRAM

INDICATOR	1986	1987	1988	1990	1993	2000	2030
	- MILLIONS OF DOLLARS -						
WATER	**9.6**	**8.7**	**8.7**	**8.7**	**9.5**	**9.8**	**11.2**
WATERSHED	8.2	7.3	7.3	7.3	8.0	8.3	9.4
SOILS	1.4	1.4	1.4	1.4	1.5	1.5	1.8
MINERALS	**3.4**	**2.9**	**2.9**	**2.9**	**3.1**	**3.4**	**3.8**
RANGE	**2.2**	**2.3**	**2.3**	**2.3**	**2.8**	**2.8**	**3.0**
RECREATION	**1.5**	**1.7**	**1.7**	**1.7**	**2.5**	**2.8**	**3.6**
FOREST RECREATION	.6	.7	.7	.7	1.3	1.5	2.0
URBAN FORESTS	.9	1.0	1.0	1.0	1.2	1.3	1.6
WILDERNESS	**.3**	**.3**	**.3**	**.3**	**.4**	**.7**	**.9**
TIMBER	**52.9**	**52.2**	**52.2**	**52.2**	**58.3**	**64.2**	**73.4**
INVENTORY	11.3	7.6	7.6	7.6	8.7	9.6	11.1
EVALUATION	3.2	2.1	2.1	2.1	2.4	2.7	3.3
BIOLOGY	16.6	17.6	17.6	17.6	19.3	20.8	23.7
GENETICS	2.5	4.4	4.4	4.4	4.7	5.0	5.7
PRODUCTION ECONOMICS	1.9	2.3	2.3	2.3	2.4	2.7	2.9
HARVESTING	2.3	2.1	2.1	2.1	2.9	3.1	3.5
PROCESSING	13.2	14.0	14.0	14.0	15.7	17.8	20.4
MARKETING ECONOMICS	1.9	2.1	2.1	2.1	2.4	2.5	2.8
WILDLIFE-FISH	**5.8**	**6.2**	**6.2**	**6.2**	**6.9**	**8.0**	**9.6**
PROTECTION	**24.6**	**22.9**	**22.9**	**22.9**	**24.5**	**26.3**	**29.5**
INSECTS	10.5	10.0	10.0	10.0	10.5	11.4	12.8
DISEASE	7.2	6.6	6.6	6.6	7.4	7.8	8.8
FIRE	6.8	6.3	6.3	6.3	6.6	7.1	7.9
PROGRAM TOTAL [1]	**100.4**	**96.6**	**96.6**	**96.6**	**108.0**	**118.0**	**135.0**
CONSTRUCTION	**.3**	**.3**	**.3**	**.3**	**1.5**	**3.2**	**3.8**
TOTAL RESEARCH [2]	**112.1**	**109.4**	**109.4**	**109.4**	**122.2**	**135.1**	**153.6**

[1]Program data includes Washington Office costs and some international forestry costs not included in chapter 2 or in appendix H.

[2]Includes some Administrative costs not shown in the body of the table.

TABLE L.HC--PROJECTED RESEARCH PROGRAM COSTS -- HIGH BOUND RECOMMENDED PROGRAM

INDICATOR	1986	1987	1988	1990	1993	2000	2030
	- MILLIONS OF DOLLARS -						
WATER	**9.6**	**8.7**	**9.4**	**9.4**	**9.9**	**11.3**	**12.0**
WATERSHED	8.2	7.3	7.8	7.8	8.3	9.5	10.0
SOILS	1.4	1.4	1.6	1.6	1.6	1.8	2.0
MINERALS	**3.4**	**2.8**	**3.2**	**3.2**	**3.4**	**3.8**	**4.6**
RANGE	**2.2**	**2.3**	**2.8**	**2.7**	**2.8**	**3.0**	**3.4**
RECREATION	**1.5**	**1.7**	**2.5**	**2.6**	**2.8**	**3.6**	**5.0**
FOREST RECREATION	.6	.7	1.3	1.3	1.6	2.0	3.0
URBAN FORESTS	.9	1.0	1.2	1.3	1.2	1.6	2.0
WILDERNESS	**.3**	**.3**	**.4**	**.7**	**.7**	**.9**	**1.1**
TIMBER	**52.9**	**51.9**	**58.0**	**60.8**	**64.1**	**73.1**	**91.2**
INVENTORY	11.3	7.5	8.7	9.2	9.5	11.1	14.2
EVALUATION	3.2	2.1	2.4	2.6	2.7	3.3	3.8
BIOLOGY	16.6	17.5	18.7	19.6	20.6	23.5	28.6
GENETICS	2.5	4.3	4.8	4.8	5.1	5.8	7.1
PRODUCTION ECONOMICS	1.9	2.3	2.4	2.6	2.7	2.9	4.0
HARVESTING	2.3	2.1	2.9	2.9	3.1	3.5	4.6
PROCESSING	13.2	13.4	15.8	16.8	17.8	20.2	25.9
MARKETING ECONOMICS	1.9	2.1	2.3	2.4	2.6	2.8	3.0
WILDLIFE-FISH	**5.8**	**6.0**	**7.0**	**7.7**	**8.1**	**9.7**	**10.9**
PROTECTION	**24.6**	**22.9**	**24.7**	**24.8**	**26.2**	**29.6**	**35.7**
INSECTS	10.5	10.0	10.6	10.7	11.2	12.8	16.6
DISEASE	7.2	6.6	7.4	7.4	7.8	8.9	9.7
FIRE	6.8	6.3	6.7	6.8	7.2	7.9	9.4
PROGRAM TOTAL [1]	**100.4**	**96.6**	**108.0**	**112.0**	**118.0**	**135.0**	**163.9**
CONSTRUCTION	**.3**	**.3**	**1.5**	**2.2**	**3.2**	**3.8**	**5.7**
TOTAL RESEARCH [2]	**112.1**	**109.4**	**122.2**	**127.9**	**135.1**	**153.6**	**187.6**

[1]Program data includes Washington Office costs and some international forestry costs not included in chapter 2 or in appendix H.

[2]Includes some Administrative costs not shown in the body of the table.

TABLE L.1C--PROJECTED RESEARCH PROGRAM COSTS -- ALTERNATIVE 1 (CONSTANT)

INDICATOR	1986	1987	1988	1990	1993	2000	2030
				- MILLIONS OF DOLLARS -			
WATER	**8.4**	**8.4**	**8.4**	**8.5**	**8.4**	**8.4**	**8.1**
WATERSHED	7.7	7.7	7.7	7.8	7.7	7.6	7.1
SOILS	.7	.7	.7	.7	.7	.8	1.0
MINERALS	**3.6**	**3.6**	**3.6**	**3.6**	**3.7**	**3.9**	**4.7**
RANGE	**3.2**	**3.2**	**3.2**	**3.2**	**3.2**	**3.3**	**3.7**
RECREATION	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**	**2.3**	**2.4**
FOREST RECREATION	1.1	1.1	1.1	1.1	1.1	1.2	1.4
URBAN FORESTS	1.1	1.1	1.1	1.1	1.1	1.1	1.0
WILDERNESS	**.2**	**.2**	**.2**	**.2**	**.2**	**.3**	**.5**
TIMBER	**61.3**	**61.4**	**61.2**	**61.2**	**61.2**	**60.8**	**60.1**
INVENTORY	10.6	10.6	10.5	10.5	10.5	10.5	10.6
EVALUATION	1.5	1.6	1.6	1.6	1.6	1.7	1.9
BIOLOGY	19.3	19.3	19.2	19.2	19.2	19.2	19.3
GENETICS	5.1	5.1	5.1	5.1	5.1	5.0	4.8
PRODUCTION ECONOMICS	2.3	2.3	2.3	2.4	2.4	2.3	1.9
HARVESTING	3.2	3.2	3.2	3.2	3.2	3.2	3.3
PROCESSING	17.2	17.2	17.2	17.1	17.1	16.8	16.2
MARKETING ECONOMICS	2.1	2.1	2.1	2.1	2.1	2.1	2.1
WILDLIFE-FISH	**6.2**	**6.2**	**6.2**	**6.2**	**6.2**	**6.3**	**6.4**
PROTECTION	**26.4**	**26.4**	**26.5**	**26.5**	**26.4**	**26.2**	**25.5**
INSECTS	13.6	13.6	13.6	13.6	13.5	13.4	12.7
DISEASE	6.6	6.6	6.6	6.6	6.6	6.5	6.5
FIRE	6.2	6.2	6.3	6.3	6.3	6.3	6.3
PROGRAM TOTAL [1]	**111.5**	**111.5**	**111.5**	**111.5**	**111.5**	**111.4**	**111.5**
CONSTRUCTION	**2.4**	**2.4**	**2.4**	**2.4**	**2.4**	**2.4**	**2.4**
TOTAL RESEARCH [2]	**129.1**	**129.1**	**129.1**	**129.1**	**129.1**	**129.0**	**129.1**

[1]Program data includes Washington Office Costs and some International Forestry Costs not included in appendix H.

[2]Includes some Administrative Costs not shown in the body of the table.

TABLE L.2C--PROJECTED RESEARCH PROGRAM COSTS -- ALTERNATIVE 2 (MARKET)

INDICATOR	1986	1987	1988	1990	1993	2000	2030
	- MILLIONS OF DOLLARS -						
WATER	**8.7**	**9.4**	**10.3**	**11.7**	**12.5**	**13.1**	**14.8**
WATERSHED	7.8	8.5	9.3	10.5	11.2	11.7	13.0
SOILS	.9	.9	1.0	1.2	1.3	1.4	1.8
MINERALS	**4.3**	**4.7**	**5.1**	**5.8**	**6.2**	**6.5**	**7.5**
RANGE	**4.5**	**5.0**	**5.6**	**6.6**	**7.1**	**7.4**	**8.5**
RECREATION	**1.9**	**2.1**	**2.3**	**2.9**	**3.1**	**3.2**	**3.9**
FOREST RECREATION	1.0	1.2	1.3	1.7	1.8	1.9	2.2
URBAN FORESTS	.9	.9	1.0	1.2	1.3	1.3	1.7
WILDERNESS	**.2**	**.2**	**.2**	**.3**	**.3**	**.3**	**.3**
TIMBER	**69.1**	**75.4**	**82.0**	**92.9**	**99.1**	**103.4**	**119.5**
INVENTORY	11.5	12.5	13.6	15.4	16.4	17.2	20.0
EVALUATION	2.4	2.6	2.8	3.1	3.3	3.4	3.7
BIOLOGY	21.0	22.9	24.8	28.0	30.0	31.6	37.6
GENETICS	5.1	5.6	6.2	7.1	7.6	7.9	8.9
PRODUCTION ECONOMICS	2.8	3.1	3.4	4.0	4.3	4.4	5.0
HARVESTING	4.2	4.6	5.0	5.7	6.0	6.3	6.8
PROCESSING	19.5	21.3	23.2	26.3	28.0	28.9	33.4
MARKETING ECONOMICS	2.6	2.8	3.0	3.3	3.5	3.7	4.1
WILDLIFE-FISH	**6.1**	**6.8**	**7.5**	**8.6**	**9.2**	**9.6**	**11.2**
PROTECTION	**29.1**	**31.9**	**34.5**	**39.1**	**41.8**	**43.6**	**49.5**
INSECTS	15.1	16.3	17.4	19.1	20.4	21.3	24.2
DISEASE	7.3	8.1	8.8	10.2	10.9	11.3	12.6
FIRE	6.7	7.5	8.3	9.8	10.5	11.0	12.7
PROGRAM TOTAL [1]	**123.8**	**135.7**	**147.5**	**168.1**	**179.1**	**187.0**	**215.2**
CONSTRUCTION	**3.3**	**4.0**	**4.9**	**6.6**	**7.4**	**8.6**	**14.2**
TOTAL RESEARCH [2]	**143.0**	**156.9**	**170.8**	**195.0**	**208.0**	**217.7**	**252.6**

[1]Program data includes Washington Office Costs and some International Forestry Costs not included in appendix H.

[2]Includes some Administrative Costs not shown in the body of the table.

TABLE L.3C--PROJECTED RESEARCH PROGRAM COSTS -- ALTERNATIVE 3 (NONMARKET) AND ALTERNATIVE 3A (HIGH WILDERNESS)

INDICATOR	1986	1987	1988	1990	1993	2000	2030
	- MILLIONS OF DOLLARS -						
WATER	**9.3**	**9.6**	**9.8**	**10.4**	**11.4**	**13.5**	**16.5**
WATERSHED	8.5	8.7	8.9	9.4	10.3	12.2	14.8
SOILS	.8	.9	.9	1.0	1.1	1.3	1.7
MINERALS	**4.3**	**4.4**	**4.5**	**4.7**	**5.2**	**6.1**	**7.2**
RANGE	**3.5**	**3.7**	**3.9**	**4.3**	**4.7**	**5.6**	**6.5**
RECREATION	**4.4**	**4.6**	**4.8**	**5.2**	**5.7**	**7.0**	**9.2**
FOREST RECREATION	2.3	2.5	2.6	2.9	3.2	3.8	4.7
URBAN FORESTS	2.1	2.1	2.2	2.3	2.5	3.2	4.5
WILDERNESS	**.5**	**.6**	**.8**	**1.1**	**1.2**	**1.3**	**1.8**
TIMBER	**62.9**	**65.1**	**67.3**	**72.7**	**79.7**	**94.3**	**111.5**
INVENTORY	10.9	11.1	11.4	12.1	13.3	15.9	19.4
EVALUATION	2.6	2.6	2.6	2.7	2.9	3.3	3.5
BIOLOGY	19.8	20.5	21.2	22.9	25.2	29.9	35.7
GENETICS	4.0	4.1	4.2	4.6	5.1	6.1	7.5
PRODUCTION ECONOMICS	2.2	2.4	2.5	2.8	3.0	3.5	3.9
HARVESTING	3.5	3.7	3.9	4.2	4.6	5.5	6.7
PROCESSING	17.7	18.3	19.0	20.6	22.6	26.6	30.7
MARKETING ECONOMICS	2.2	2.4	2.5	2.8	3.0	3.5	4.1
WILDLIFE-FISH	**8.5**	**8.8**	**9.0**	**9.7**	**10.6**	**12.5**	**14.6**
PROTECTION	**26.5**	**27.4**	**28.5**	**30.9**	**33.9**	**40.0**	**47.3**
INSECTS	12.7	13.1	13.5	14.5	15.8	18.7	21.6
DISEASE	7.1	7.3	7.6	8.2	9.1	10.7	12.9
FIRE	6.7	7.0	7.4	8.2	9.0	10.6	12.8
PROGRAM TOTAL [1]	**119.9**	**124.2**	**128.4**	**138.8**	**152.4**	**180.4**	**214.6**
CONSTRUCTION	**3.3**	**3.6**	**3.9**	**4.5**	**5.3**	**7.4**	**14.2**
TOTAL RESEARCH [2]	**139.0**	**144.0**	**148.9**	**161.0**	**177.0**	**209.9**	**252.0**

[1]Program data includes Washington Office Costs and some International Forestry Costs not included in appendix H.

[2]Includes some Administrative Costs not shown in the body of the table.

TABLE L.4C--PROJECTED RESEARCH PROGRAM COSTS -- ALTERNATIVE 4 (ALL RESOURCES)

INDICATOR	1986	1987	1988	1990	1993	2000	2030
			- MILLIONS OF DOLLARS -				
WATER	**8.5**	**8.7**	**10.4**	**10.4**	**11.8**	**14.1**	**15.6**
WATERSHED	7.7	8.8	9.4	9.4	10.6	12.7	14.0
SOILS	.8	.9	1.0	1.0	1.2	1.4	1.6
MINERALS	**4.2**	**4.7**	**5.0**	**4.9**	**5.5**	**6.6**	**7.2**
RANGE	**3.7**	**4.3**	**4.9**	**5.3**	**5.9**	**7.0**	**7.3**
RECREATION	**3.8**	**4.3**	**4.7**	**4.8**	**5.3**	**6.3**	**6.8**
FOREST RECREATION	2.2	2.5	2.7	2.8	3.1	3.6	3.7
URBAN FORESTS	1.6	1.8	2.0	2.0	2.2	2.7	3.1
WILDERNESS	**.4**	**.5**	**.6**	**.7**	**.8**	**1.0**	**1.0**
TIMBER	**65.8**	**74.8**	**81.3**	**82.2**	**92.7**	**109.6**	**119.2**
INVENTORY	10.7	12.2	13.3	13.6	15.3	18.3	20.3
EVALUATION	2.6	2.8	3.0	2.8	3.2	3.7	3.8
BIOLOGY	20.6	23.4	25.3	25.4	28.6	33.9	36.8
GENETICS	5.1	5.8	6.2	6.2	7.0	8.2	8.7
PRODUCTION ECONOMICS	2.5	2.9	3.2	3.4	3.8	4.5	4.8
HARVESTING	3.6	4.1	4.5	4.5	5.1	6.1	6.8
PROCESSING	18.5	21.0	22.8	23.1	26.0	30.6	33.4
MARKETING ECONOMICS	2.2	2.6	3.0	3.2	3.7	4.3	4.6
WILDLIFE-FISH	**6.5**	**7.3**	**7.9**	**7.9**	**8.9**	**10.5**	**11.4**
PROTECTION	**26.9**	**30.2**	**32.5**	**32.1**	**36.2**	**43.2**	**47.7**
INSECTS	13.1	14.6	15.6	15.1	17.1	20.5	23.0
DISEASE	7.2	8.1	8.8	8.8	9.9	11.7	12.7
FIRE	6.6	7.5	8.1	8.2	9.2	11.0	12.0
PROGRAM TOTAL [1]	**119.8**	**136.2**	**147.4**	**148.2**	**167.0**	**198.2**	**216.4**
CONSTRUCTION	**3.2**	**3.9**	**4.6**	**5.2**	**6.2**	**8.5**	**14.2**
TOTAL RESEARCH [2]	**139.0**	**158.0**	**171.0**	**172.0**	**194.0**	**230.7**	**254.0**

[1]Program data includes Washington Office Costs and some International Forestry Costs not included in appendix H.

[1]Includes some Administrative Costs not shown in the body of the table.

TABLE L.5C--PROJECTED RESEARCH PROGRAM COSTS -- ALTERNATIVE 5 (REDUCED)

INDICATOR	1986	1987	1988	1990	1993	2000	2030
	- MILLIONS OF DOLLARS -						
WATER	**6.0**	**5.9**	**5.9**	**5.8**	**5.8**	**5.8**	**5.8**
WATERSHED	5.2	5.2	5.3	5.4	5.4	5.4	5.4
SOILS	.8	.7	.6	.4	.4	.4	.4
MINERALS	**2.6**	**2.6**	**2.7**	**2.8**	**2.8**	**2.8**	**2.8**
RANGE	**2.6**	**2.7**	**2.8**	**3.0**	**3.0**	**3.0**	**3.0**
RECREATION	**1.6**	**1.5**	**1.5**	**1.6**	**1.6**	**1.6**	**1.6**
FOREST RECREATION	1.1	.9	.9	.9	.9	.9	.9
URBAN FORESTS	.5	.6	.6	.7	.7	.7	.7
WILDERNESS	**.1**	**.1**	**.1**	**.1**	**.1**	**.1**	**0**
TIMBER	**47.1**	**46.9**	**47.1**	**47.0**	**47.0**	**47.0**	**47.2**
INVENTORY	8.7	8.6	8.5	8.4	8.4	8.4	8.4
EVALUATION	1.2	1.2	1.3	1.3	1.3	1.3	1.3
BIOLOGY	14.8	14.8	14.8	14.8	14.8	14.8	14.9
GENETICS	3.1	3.1	3.2	3.2	3.2	3.2	3.3
PRODUCTION ECONOMICS	1.9	1.8	1.8	1.7	1.7	1.7	1.7
HARVESTING	2.6	2.6	2.7	2.8	2.8	2.8	2.8
PROCESSING	13.1	13.1	13.1	13.1	13.1	13.1	13.1
MARKETING ECONOMICS	1.7	1.7	1.7	1.7	1.7	1.7	1.7
WILDLIFE-FISH	**4.9**	**4.8**	**4.6**	**4.4**	**4.4**	**4.4**	**4.4**
PROTECTION	**20.0**	**20.0**	**20.1**	**20.1**	**20.1**	**20.2**	**20.1**
INSECTS	10.0	9.9	10.0	10.1	10.1	10.1	10.0
DISEASE	4.6	4.7	4.7	4.7	4.7	4.8	4.8
FIRE	5.4	5.4	5.4	5.3	5.3	5.3	5.3
PROGRAM TOTAL [1]	**84.8**	**84.5**	**84.6**	**84.8**	**84.8**	**84.8**	**84.8**
CONSTRUCTION	**.5**	**.5**	**.5**	**.5**	**.5**	**.5**	**.5**
TOTAL RESEARCH [2]	**96.8**	**96.5**	**96.6**	**96.8**	**96.8**	**96.8**	**96.8**

[1]Program data includes Washington Office Costs and some International Forestry Costs not included in appendix H.

[2]Includes some Administrative Costs not shown in the body of the table.

TABLE L.6C--PROJECTED RESEARCH PROGRAM COSTS -- ALTERNATIVE 6 (IMPLEMENT PLANS)

INDICATOR	1986	1987	1988	1990	1993	2000	2030
				- MILLIONS OF DOLLARS -			
WATER	**9.3**	**10.2**	**11.2**	**13.3**	**16.0**	**17.9**	**19.4**
WATERSHED	8.4	9.2	10.1	12.0	14.4	16.1	17.4
SOILS	.9	1.0	1.1	1.3	1.6	1.8	2.0
MINERALS	**4.6**	**4.9**	**5.3**	**6.2**	**7.4**	**8.3**	**8.8**
RANGE	**4.2**	**4.6**	**5.0**	**6.1**	**7.3**	**8.1**	**8.5**
RECREATION	**4.2**	**4.6**	**4.9**	**5.6**	**6.7**	**7.3**	**7.5**
FOREST RECREATION	2.4	2.6	2.8	3.2	3.8	4.1	3.9
URBAN FORESTS	1.8	2.0	2.1	2.4	2.9	3.2	3.6
WILDERNESS	**.7**	**.7**	**.8**	**.9**	**1.2**	**1.2**	**1.0**
TIMBER	**73.3**	**79.8**	**86.2**	**101.4**	**122.0**	**135.8**	**146.8**
INVENTORY	12.1	13.3	14.5	17.3	20.8	23.2	24.9
EVALUATION	3.0	3.1	3.1	3.1	3.8	4.2	4.4
BIOLOGY	22.5	24.6	26.7	31.7	38.1	42.5	45.8
GENETICS	5.7	6.2	6.6	7.7	9.3	10.3	10.9
PRODUCTION ECONOMICS	2.8	3.1	3.3	3.9	4.7	5.3	5.7
HARVESTING	4.2	4.4	4.7	5.2	6.3	7.2	8.4
PROCESSING	20.6	22.5	24.4	29.1	34.9	38.5	41.8
MARKETING ECONOMICS	2.4	2.6	2.9	3.4	4.1	4.6	4.9
WILDLIFE-FISH	**7.2**	**7.8**	**8.4**	**9.7**	**11.7**	**13.2**	**14.6**
PROTECTION	**29.5**	**32.3**	**35.3**	**42.4**	**50.8**	**56.6**	**60.1**
INSECTS	14.2	15.6	17.1	20.7	24.8	27.7	29.9
DISEASE	8.0	8.7	9.5	11.4	13.7	15.2	15.9
FIRE	7.3	8.0	8.7	10.3	12.3	13.7	14.3
PROGRAM TOTAL [1]	**133.1**	**144.9**	**157.1**	**185.8**	**223.0**	**248.4**	**266.8**
CONSTRUCTION	**4.0**	**4.7**	**5.6**	**7.6**	**9.5**	**11.6**	**17.0**
TOTAL RESEARCH [2]	**154.5**	**168.0**	**182.0**	**214.9**	**258.0**	**287.7**	**310.0**

[1]Program data includes Washington Office Costs and some International Forestry Costs not included in appendix H.

[1]Includes some Administrative Costs not shown in the body of the table.

TABLE L.7C--PROJECTED RESEARCH PROGRAM COSTS -- ALTERNATIVE 7 (HIGH PNV)

INDICATOR	1986	1987	1988	1990	1993	2000	2030
	- MILLIONS OF DOLLARS -						
WATER	**8.1**	**9.3**	**10.5**	**11.7**	**13.3**	**13.7**	**13.1**
WATERSHED	7.3	8.4	9.5	10.6	12.0	12.3	11.3
SOILS	.8	.9	1.0	1.1	1.3	1.4	1.8
MINERALS	**4.2**	**4.6**	**5.1**	**5.4**	**6.4**	**7.1**	**9.5**
RANGE	**3.9**	**4.5**	**5.1**	**5.9**	**6.8**	**7.3**	**8.4**
RECREATION	**2.4**	**2.6**	**3.0**	**3.2**	**3.8**	**4.1**	**5.3**
FOREST RECREATION	1.3	1.4	1.6	1.7	2.0	2.2	3.0
URBAN FORESTS	1.1	1.2	1.4	1.5	1.8	1.9	2.3
WILDERNESS	**.3**	**.3**	**.3**	**.3**	**.3**	**.4**	**.5**
TIMBER	**65.8**	**75.0**	**85.0**	**95.9**	**110.5**	**118.1**	**134.0**
INVENTORY	11.0	12.5	14.2	16.1	18.5	19.8	22.4
EVALUATION	1.9	2.2	2.6	3.2	3.6	3.7	3.6
BIOLOGY	20.2	23.0	26.0	29.3	33.8	36.4	41.9
GENETICS	4.8	5.5	6.2	7.1	8.1	8.6	9.2
PRODUCTION ECONOMICS	2.9	3.3	3.7	4.1	4.8	5.1	5.6
HARVESTING	3.8	4.3	4.8	5.1	5.9	6.4	7.4
PROCESSING	18.4	21.0	23.8	26.8	30.9	32.8	37.6
MARKETING ECONOMICS	2.8	3.2	3.7	4.2	4.9	5.3	6.3
WILDLIFE-FISH	**6.5**	**7.4**	**8.3**	**9.3**	**10.7**	**11.5**	**13.2**
PROTECTION	**28.7**	**32.6**	**36.9**	**41.3**	**47.2**	**49.5**	**51.0**
INSECTS	14.3	16.1	18.1	19.9	22.9	24.4	27.1
DISEASE	7.4	8.5	9.7	11.2	12.8	13.5	14.2
FIRE	7.0	8.0	9.1	10.2	11.5	11.6	9.7
PROGRAM TOTAL [1]	**119.8**	**136.2**	**154.3**	**173.4**	**199.0**	**211.9**	**235.0**
CONSTRUCTION	**3.2**	**4.1**	**5.1**	**6.9**	**8.3**	**9.8**	**15.4**
TOTAL RESEARCH [2]	**139.0**	**158.0**	**179.0**	**201.0**	**231.0**	**246.6**	**276.4**

[1]Program data includes Washington Office Costs and some International Forestry Costs not included in appendix H.

[2]Includes some Administrative Costs not shown in the body of the table.

TABLE L.8C--PROJECTED RESEARCH PROGRAM COSTS -- ALTERNATIVE 8 (1980 RPA)

INDICATOR	1986	1987	1988	1990	1993	2000	2030
	- MILLIONS OF DOLLARS -						
WATER	**9.3**	**10.2**	**11.2**	**13.3**	**16.0**	**17.9**	**19.4**
WATERSHED	8.4	9.2	10.1	12.0	14.4	16.1	17.4
SOILS	.9	1.0	1.1	1.3	1.6	1.8	2.0
MINERALS	**4.6**	**4.9**	**5.3**	**6.2**	**7.4**	**8.3**	**8.8**
RANGE	**4.2**	**4.6**	**5.0**	**6.1**	**7.3**	**8.1**	**8.5**
RECREATION	**4.2**	**4.6**	**4.9**	**5.6**	**6.7**	**7.3**	**7.5**
FOREST RECREATION	2.4	2.6	2.8	3.2	3.8	4.1	3.9
URBAN FORESTS	1.8	2.0	2.1	2.4	2.9	3.2	3.6
WILDERNESS	**.7**	**.7**	**.8**	**.9**	**1.2**	**1.2**	**1.0**
TIMBER	**73.3**	**79.8**	**86.2**	**101.4**	**122.0**	**135.8**	**146.8**
INVENTORY	12.1	13.3	14.5	17.3	20.8	23.2	24.9
EVALUATION	3.0	3.1	3.1	3.1	3.8	4.2	4.4
BIOLOGY	22.5	24.6	26.7	31.7	38.1	42.5	45.8
GENETICS	5.7	6.2	6.6	7.7	9.3	10.3	10.9
PRODUCTION ECONOMICS	2.8	3.1	3.3	3.9	4.7	5.3	5.7
HARVESTING	4.2	4.4	4.7	5.2	6.3	7.2	8.4
PROCESSING	20.6	22.5	24.4	29.1	34.9	38.5	41.8
MARKETING ECONOMICS	2.4	2.6	2.9	3.4	4.1	4.6	4.9
WILDLIFE-FISH	**7.2**	**7.8**	**8.4**	**9.7**	**11.7**	**13.2**	**14.6**
PROTECTION	**29.5**	**32.3**	**35.3**	**42.4**	**50.8**	**56.6**	**60.1**
INSECTS	14.2	15.6	17.1	20.7	24.8	27.7	29.9
DISEASE	8.0	8.7	9.5	11.4	13.7	15.2	15.9
FIRE	7.3	8.0	8.7	10.3	12.3	13.7	14.3
PROGRAM TOTAL [1]	**133.1**	**144.9**	**157.1**	**185.8**	**223.0**	**248.4**	**266.8**
CONSTRUCTION	**4.0**	**4.7**	**5.6**	**7.6**	**9.5**	**11.6**	**17.0**
TOTAL RESEARCH [2]	**154.5**	**168.0**	**182.0**	**214.9**	**258.0**	**287.7**	**310.0**

[1]Program data includes Washington Office Costs and some International Forestry Costs not included in appendix H.

[2]Includes some Administrative Costs not shown in the body of the table.

TABLE L.9C--PROJECTED RESEARCH PROGRAM COSTS -- ALTERNATIVE 9 (HIGH PRODUCTIVITY)

INDICATOR	1986	1987	1988	1990	1993	2000	2030
	-MILLIONS OF DOLLARS-						
WATER	**9.3**	**10.3**	**11.1**	**12.5**	**13.0**	**13.3**	**14.7**
WATERSHED	8.4	9.3	10.0	11.3	11.7	11.9	12.8
SOILS	.9	1.0	1.1	1.2	1.3	1.4	1.9
MINERALS	**4.3**	**4.4**	**4.4**	**4.2**	**4.3**	**4.4**	**5.0**
RANGE	**4.4**	**5.0**	**5.5**	**6.4**	**6.7**	**7.0**	**8.3**
RECREATION	**2.3**	**2.3**	**2.4**	**2.3**	**2.4**	**2.4**	**2.5**
FOREST RECREATION	1.3	1.3	1.3	1.2	1.3	1.3	1.5
URBAN FORESTS	1.0	1.0	1.1	1.1	1.1	1.1	1.0
WILDERNESS	**.2**	**.2**	**.1**	**0**	**0**	**0**	**.1**
TIMBER	**78.3**	**83.2**	**86.6**	**92.3**	**95.7**	**98.6**	**113.1**
INVENTORY	11.6	12.0	12.1	12.2	12.5	12.8	13.6
EVALUATION	2.2	2.3	2.4	2.5	2.6	2.6	2.8
BIOLOGY	25.8	27.4	28.5	30.2	31.5	33.0	39.7
GENETICS	6.4	6.7	6.9	7.3	7.6	7.8	8.8
PRODUCTION ECONOMICS	2.7	2.9	3.0	3.2	3.3	3.5	4.0
HARVESTING	4.6	5.0	5.4	6.1	6.3	6.3	6.6
PROCESSING	22.0	23.6	24.8	27.0	27.9	28.4	32.7
MARKETING ECONOMICS	3.0	3.3	3.5	3.8	4.0	4.2	4.9
WILDLIFE-FISH	**7.0**	**7.5**	**7.9**	**8.5**	**8.9**	**9.2**	**11.0**
PROTECTION	**31.7**	**33.0**	**33.8**	**34.7**	**35.9**	**36.9**	**41.2**
INSECTS	16.2	16.9	17.3	17.7	18.2	18.5	19.5
DISEASE	8.1	8.4	8.6	8.8	9.2	9.5	11.1
FIRE	7.4	7.7	7.9	8.2	8.5	8.9	10.6
PROGRAM TOTAL [1]	**137.5**	**146.0**	**151.8**	**160.9**	**166.8**	**171.8**	**195.8**
CONSTRUCTION	**3.3**	**3.8**	**4.3**	**5.2**	**5.4**	**5.7**	**6.9**
TOTAL RESEARCH [2]	**156.8**	**166.7**	**173.6**	**184.7**	**191.4**	**197.1**	**223.8**

[1]Program data includes Washington Office Costs and some International Forestry Costs not included in appendix H.

[2]Includes Administrative Costs not shown in the body of the table.

Appendix M:

Public Comment and Analysis

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INTRODUCTION

This appendix contains three sections. Information contained in the first section was reported in the May 25, 1984 national summary titled "Analysis of Public Response to the RPA Draft Environmental Impact Statement 1985 - 2030." All comments reported are intended to depict the range of public feelings. They are not an attempt to count numbers, but attempt to show the array and type of comments. One printed comment does not necessarily reflect only one respondent; many people may have made the same type of response.

The second section, Response to Comments, contains a synopsis of the substantive comments gleaned from the public as well as our response to those comments. This section treats only comments that were answerable; it does not attempt to answer public opinion statements or personal views. Since this is a national document, it treats only national issues. Comments pertaining to local matters were referred to the appropriate Regional Office.

The third section contains a sampling of the national interest letters which were received in response to the draft Environmental Impact Statement (DEIS). Due to space limitations, it was impractical to re-print the over 1800 letters received. The following guidelines were followed for Section 3:

The letters represent national offices of organizations or agencies or elected officials. Letters received from local organizations or local chapters of national organizations were reviewed at the Regions.

Some letters are included that were not included in the response analysis due to their late arrival. They are in this appendix because of their substantive nature and because they were considered by management in developing the preferred alternative.

Due to space limitations, some letters were not printed in full. Excerpts were derived from the more substantive portion of these letters, or summaries included in these letters were used. In all cases, the complete texts are available for review in the national RPA office in Washington, D.C.

The numbers in the margin of the letters correspond to the comment numbers in Section 2.

Highlights and Demographics

Over 1800 responses were received. Responses were placed in the following categories:

Public

A - Individuals--citizens, employees of agencies (including Forest Service) and interest group members, not responding in an official capacity.

B - Interest Group--business, commodity-producing or representing commodity producers including timber, lumber, minerals, and livestock.

O - Interest Group--service-producing businesses and organizations including outfitters/guides, camps, ski areas, or permittees.

C - Interest Group--conservationists, preservationists, nonmotorized recreation groups.

D - Interest Group--civic groups including Lions, Chambers of Commerce, business bureaus and other nonaligned and minority groups.

E - Interest Group--educational institutions and professional societies.

R - Interest Group--motorized recreation including snowmobile, 4x4, and motorcycle organizations.

Other

M - Elected Official--local, including Mayors and County Commissioners.

G - Elected Official--State, including Governors and State Legislators.

H - Elected Official--Federal, including Senators and Representatives.

L - Public Agency--Local.

S - Public Agency--State.

F - Public Agency--Federal, including official Forest Service.

T - Tribal Governments.

Following is a brief demographic outline of responses:

Almost one-fourth of all responses came from Pacific Northwest (R-6), followed by the Pacific Southwest (R-5), followed by the East (R-9). The least came from the Washington, D.C. area and Alaska. Half of all respondents came from the West, one-fourth from the Rocky Mountains, and one-fourth from the East.

Public (A, B, O, C, D, E, R) was greater than the Other category of respondents by 8 to 1 (6 to 1, not considering form letters). Eighty-three percent of the public respondents were individuals (53 percent, not considering form letters).

No elected Federal officials responded.

Eleven responses came from tribal governments, all from the Pacific Northwest.

Nine elected State officials responded.

A form-letter developed by a national ski organization produced approximately 25 percent of the responses: 262 form letters in Region 5 and 145 in the Rocky Mountain, Intermountain, Southern and Eastern Regions.

Over 70 responses from the Southwestern and Eastern Regions related to a series of newspaper articles on forest management and the RPA process which were printed in an Arizona newspaper, the Tucson Daily Star.

Close to an equal number of responses came from commodity businesses and conservation groups.

Some responses (mainly the form letter) came from every State: the majority from Oregon, followed by California.

People who responded to the DEIS knew of the opportunity and chose to comment. The respondents do not represent a statistically reliable cross-section of the American public. Also, many people believe they can participate more effectively in Regional and National Forest planning and thus contribute to the development of the 1985 RPA Program.

Summary of the Analysis System

The process used to prepare the national summary is based on established procedures for analyzing public response. Quantitative information is considered highly reliable and repeatable (a different analysis team using the same procedure would find the same results). Although the qualitative information (reasons cited for preferences) is considered fairly reliable and repeatable, summary results are more subjective and interpretive.

The analysis focused on public preferences for the alternatives and the reasons for those preferences. It also focused on alternatives preferred by various interests and how preferences varied in different geographic regions of the Nation. When a respondent expressed a preference for an alternative, it was coded pro. A comment in support of an alternative but with some modification was coded modified, and a comment that specifically rejected an alternative was coded con. Additionally, if someone talked about an alternative but neither endorsed or rejected it, the comment was coded addressed. Under this system, there can be only one pro alternative per respondent, but any number of con or addressed comments.

When respondents commented on issues and/or goals, the appropriate issue/goal number was coded. In cases where several issues/goals were addressed, the analyst coded the one issue and one goal that were discussed most.

The analysis system is based upon standard procedures (in Forest Service Handbook 1609.15) that have been developed to objectively summarize public comment. Comments were coded according to FS Regional source of comment, interest affiliation of respondent, and respondent identifier. Preferences for each of the nine alternatives were coded for each response, as well as information on other selected topics which are discussed by the respondents. Information was stored as an electronic data base, and

quantitative results for each Forest Service Region and four geographic regions were determined. The geographic regions are: West--FS Regions 5, 6, and 10; Rocky Mountain--FS Regions 1, 2, 3, and 4; East--FS Regions 8 and 9; and Washington, D.C.

Reasons for preferences are also organized by Forest Service Regions and geographic regions. The reasons for and against each alternative are grouped together as are comments on other topics and portions of the document addressed by the respondents. Qualitative analysis was done using content analysis summary procedures. Comments of an editorial or technical nature that were too specific to summarize were sent directly to the RPA DEIS authors.

Use of Analysis Results

The National Summary Report was primarily for Forest Service and Department officials who developed the 1985 RPA Progam for submission to the President.

The geographic region reports were for Regional Foresters and Station and Area Directors who made recommendations to the Chief. Portions of regional reports were distributed to WO Staff Directors and RPA staff members to provide more detailed, specific information.

All original letters and other supporting documentation leading to the development of regional reports are filed for inspection at the Regional Offices. Copies of all late responses and letters and documentation leading to the Washington, D.C., area report are filed for inspection in the Washington Office.

SECTION 1: NATIONAL PUBLIC COMMENT ANALYSIS

This section summarizes responses received by the Forest Service on the DEIS for the 1985 RPA Program. The DEIS was distributed to nearly 12,000 individuals, interest groups, and government agencies and officials known to be interested. In addition to direct mailing, avilability was announced by public notification and direct contacts by Forest Service officials. A special effort was made to contact national and regional interest groups to encourage better understanding of and involvement in the 1985 RPA process. The purpose of the public review was to receive comments on the nine alternatives presented in the DEIS. Then the public comments, along with other evaluation factors, were used by Department of Agriculture officials to develop a preferred alternative. The preferred alternative became the Recommended 1985 RPA Program submitted by the Secretary of Agriculture to the President for transmittal to Congress.

The goal of this section is to summarize public comments in a manner that reflects public concerns, preferences, and major reasons for such preferences. It is divided into four parts: Comments on Goals, Comments on Issues, Comments on Alternatives, and Comments on Process. The first three begin with an overall discussion of the section topic including national trends, quantitative information, and items of note. The general portions are followed by discussions of each goal, issue, and alternative. The last part, Comments on Process, discusses how well the respondents felt the DEIS was prepared and how well it was integrated into all other major portions of the planning process--with the RPA Assessment, Regional Guides, Forest and State plans, and compliance with the National Environmental Policy Act (NEPA).

Comments on Goals

Approximately half of the respondents, mainly individuals, addressed the goals (refer to chapter 1 for the goal statements). These comments were proportionate to the number of respondents from the different geographic regions of the country and to the respondent category.

The response coding system allowed analysts to pick up the one goal addressed most by a given respondent. Under this system, the goal significantly most addressed when not considering form letters was timber (13 percent). Seventeen respondents plus all form letters from the ski association addressed the recreation goal most. Although the coding system picked up only each respondent's most often addressed goal, each goal received specific and substantive comment. The low numbers prevent noting any particular geographic trend.

The goal responses listed attempt to reflect the range of responses and do not necessarily reflect only the most numerous comments. Similar responses were usually combined rather than repeated.

Following are highlights of comments addressing goals in general:

> More direction should be given to maintaining the existing, balanced, multiple-use character of the National Forest System. (Comment shared by all major respondent groups.)

Goals should preserve and enhance the ability of the Forest Service and user groups to effectively respond to possible changes in demands over both short and long term.

Long-term RPA goals are not realistic because of the harvest deficit constraints.

More coordination with other government and private interests is needed.

National goals place too much emphasis on resource extraction.

Other comments addressed access without cost to the user, improvement of public education in management practices, not emphasizing nonmarket resources to the exclusion of market resources, and States' preferences for activities that increase revenues. A few respondents addressed air quality. The Environmental Protection Agency stated that air quality and related visibility concerns should be a goal.

Goal 1 - Water

Individuals and State agencies contributed the bulk of the comments on the water goal:

The maintenance and improvement of water quality needs to be established as a goal.

Emphasis should be on water quality, not water quantity. Define a baseline for variables and specifications for water quality. Increased yield may be associated with decreased water quality. Watershed protection and not yield should be the number one priority.

Water quality concerns will constrain timber harvest. Suggest modification of hydrologic limits.

Encourage increased water yield through sound timber and range management practices.

Forest Service is right on target with its goal statement and needs to push this one as hard as it has the traditional timber management goal.

Of particular importance is the associated riparian system for water quality, fish and wildlife, recreation, and tourism. An important subject not brought out in the goals for water deals with the restoration and maintenance of riparian vegetation.

Goal 2 - Minerals and Energy

The comments received on this goal were primarily from individuals and business interest groups.

Goal should be to expand mineral resource development on National Forest System land and take action to open or maintain access to mineral resources. Lands having energy and mineral potential must be identified.

Mineral and energy goal is entirely passive and reactive. Give high priority to mineral and energy development, accelerate to increase production. A larger population requires this. Encourage mining, don't add burdensome restrictions.

Goals and opportunities outlined here are excellent and supportive of efficient exploration, development, and reclamation in potential mineral resource areas.

Mineral extraction and economic returns are overemphasized, providing short-term gains but long-term detriment to resources. Environmental protection should be emphasized. Avoid mineral activity in wilderness and fragile areas.

Keep low priority on minerals and energy goal; ensure disturbed sites are reclaimed through law enforcement.

Could the Forest Service emphasize research to promote creation of alternate energy forms? Land resources could be spared much mineral extraction.

Streamlining the leasing and permitting process should only be considered if it does not compromise other important forest values. Every effort should be made to ensure detrimental activities are adequately mitigated prior to granting licenses or permits.

Goal 3 - Range

Range comments came mainly from individuals, commodity businesses, and conservation groups. The comments originated in every geographic region.

Revise the goal to ensure that the range is restored to a healthy condition rather than allocate 50 percent to wildlife.

Continued availability of grazing areas should be assured through RPA.

Moderate production goals are adequate.

Improve range productivity and potential.

Prevent overgrazing and riparian habitat destruction. National Forests and Grasslands should not be forced to make up for underproduction on private lands.

Manage range resources to provide a greater share of national and international consumer demand.

Ensure that present use is cost effective, environmentally safe, and returns fair market value. Do not allow commercial exploitation of rangelands.

Increasing range animal unit months (AUMs) may take away from fish and wildlife AUMs. Mitigate all negative impacts.

Goal 4 - Recreation

The bulk of the following comments and those focused on this goal came from the ski group form letter, submitted from all geographic regions. A good portion of all respondents addressed cost. Some felt recreation should be self-supporting, some felt dispersed recreation should be free, and some felt all recreation should be free.

Place higher priority on recreation. Many people enjoy visits to National Forests, they help ward off mental and physical ills (West and Rocky Mountain comment).

Developed nonwilderness recreation should be top priority. Continue an active role in developing outdoor recreation facilities, at least at existing level. These facilities encourage tourism.

Skiing should be given highest priority.

Move to user fees is an excellent idea. User fees should be applied to provide recreation site funding. Recreation should be self-supporting.

In areas where services and personnel are necessary to protect the backcountry, users should expect to pay at least a portion of these management costs.

Collect fees for developed recreation facilities, not other recreation uses. Too much concern with dollars. There must always be areas that are accessible for free.

The downward adjustment of recreation's estimated net value appears arbitrary and may favor those alternatives with commodity resources which conflict with quality recreation opportunities.

Maintenance of Forest Service recreation sites has not kept pace with increasing demand.

Dispersed recreation can be enhanced with an accelerated timber harvest program.

Reduction of timber and grazing outputs would enable recreation to recover.

Obtain more public rights-of-way to isolated Forest Service parcels; initiate land exchanges or purchases for key recreation sites where private timber companies own land; identify and develop additional areas for dispersed recreation.

Designate roadless areas not included in wilderness for backcountry recreation. In California. roaded recreation opportunities are overabundant; unroaded recreation is in short supply.

Recreation goals should include objective of holding certain areas in trust as irreplaceable portions of the Nation's natural heritage (West comment).

If public use of private lands for recreation is limited, then National Forest lands which provide for recreation as one of their primary purposes are needed near cities (East comment).

The emphasis of this goal should be on low-cost, low-impact, dispersed types of recreation with minimal operation and maintenance expenses needed.

Goal 5 - Wilderness

Most of the comments were from individuals or conservation groups.

Need less wilderness; it's unreasonable to add more. The Nation can't afford to tie up large blocks of choice growing land in wilderness.

Cap wilderness at 31.9 (some recommended 30) million acres with additions limited to RARE II recommendations.

Developed, nonwilderness recreation should have top priority.

There should be a reduction of acres in the National Wilderness System when portions are found better suited for other public purposes.

The goal for wilderness is entirely inadequate. Each identifiable ecosystem type should be preserved in the wilderness system.

The proposed increase in wilderness acreage would be desirable, but might not be accomplished with the heavy trend toward exploitation proposed in this plan. Wilderness and conservation should be the main focus of the Forest Service.

Access to existing wilderness areas should be restricted through use of carrying capacity; encourage public to visit less-used wildernesses.

Support the goal for wilderness, particularly its recognition of the need to "manage wildernesss and provide research to enhance the quality of wilderness experiences and meet other purposes of the Wilderness Act, and to recommend adjustments . . . to complete the National Wilderness Preservation System."

Acres with pristine wilderness values and primitive recreation opportunities should be promoted as wilderness area. Resource conflicts should be minimized.

Suggest a concept of rotating wilderness, where large areas can be treated for timber production over a short period and then given no treatment for 120-160 years. Postcommercial cuts made 60 to 80 years ago are now in wilderness condition and can remain so for another 60-80 years, then harvested again.

When reviewing areas for potential wilderness, the Forest Service should consider State lands that meet wilderness requirements.

Goal 6 - Timber

This goal received more comment than any other goal, not considering form letters. The bulk of the comments were from individuals:

Shift future timber production (50-70 percent of Nation's needs) to private lands and increase funding on education and assistance to private owners (State and Private Forestry).

Reduce annual harvest, emphasize environmental protection, and increase utilization and silvicultural efficiency (through research). New technology should be cost effective.

Base timber goal on sustained yield with no departures.

Limit timber harvest in the Southwest. Other values are more important. Provide timber only to keep local mills open (Rocky Mountain comment).

Timber productivity helps the economic and social wellbeing of the area.

Timber cutting should not be emphasized over wildife and recreation. Provide for multiple use.

The goal implies subsidization through meeting timber demand without regard for economic constraints. Do not subsidize. Add cost effectiveness to this goal.

Oppose harvest of old growth stands (East comment).

Demands from overseas must not be allowed to accelerate cutting and degradation of our timber resources. Export manufactured products.

Increase priority of restocking so that impacts of cutting will be reduced as quickly as possible.

In the East, only standard land should be considered for timber and managed as high quality hardwood sites with constraints on road construction (East comment).

Goal 7 - Wildlife and Fish

Of the people commenting, a large number addressed the wildlife and fish goal. Most respondents were individuals. State agencies paid particular attention to this goal.

Management of fish and game resources needs to be emphasized, both game and nongame species.

State and Forest Service goals for threatened, endangered, and sensitive species are not met. Ability to attain these goals will decrease. This is clearly unacceptable. More research is needed.

Significant amounts of habitat must be maintained for wildlife species diversity. This should include limiting the number of and access to permanent, all-weather roads.

Timber types should be changed when necessary to improve wildlife habitat.

A greater national emphasis should be placed on protecting and improving critical wetlands habitat.

Goal 8 - International Forestry

This goal received comments from individuals, Federal agencies, and conservation groups:

The planning arena for forestry is now global. Help ensure a world timber supply.

International forestry is important. Continue treating it as an independent goal.

The export to an overseas market should be technology and tools, not U.S. timber. Forest Service should be dealing with domestic demand and leave international forestry to the Agency for International Development and the Food and Agricultural Organization.

Wildlife management assistance should also be a part of this program, not just threatened and endangered species protection.

Goal 9 - Protection and Support

Some respondents addressed this goal, as follows:

An adequate resource base of flora and fauna is needed for the future. More research is needed and should be coordinated with local universities.

Increased levels of law enforcement are necessary now.

Integrated pest management is worthwhile; coordinate with other agencies.

Small, unique ecosystems need to be identified and protected now.

Harvesting needs to be accelerated in the Appalachians where insects and diseases are threatening forests.

Comments on Issues

Approximately one-third of all respondents addressed issues. As with goals, the attention paid to issues was proportionate to the number of respondents from the different geographic regions of the country and to the respondent category. See appendix C for a discussion of issues.

The response coding system allowed analysts to pick up the one issue addressed most by a given respondent. Under this system, the issue most addressed was wilderness (27 percent with form letters, 3 percent without) followed by wildlife (2 percent), timber utilization (2 percent), and departures (2 percent). Though numbers for most issues were not high, comments were specific and substantive. The low numbers prevent noting geographic trends.

Following are highlights of comments addressing issues in general:

Subsidize no resource program at the expense of others. Strive for an overall cost-effective program, protecting all resources at minimum level. Allow groups to develop or subsidize their own special interests, provided no adverse impacts to other resources occur.

Timber yields should be based on nondeclining sustained yield. Consider departure option during Forest planning and after roadless areas are resolved.

Mineral exploration and development can occur without adverse impacts on other resources. Encourage development without unreasonable constraints.

Provide accessible, low-cost developed recreation to meet growing recreation demands, especially in areas close to urban populations.

Need to be more sensitive to wildlife and fish needs (including anadromous fish) when developing market and other resources.

Need greater emphasis on range management. Develop a fair market value fee system which considers administration costs, range improvements, ranchers' needs and resource protection.

Wilderness designations limit management choices and access to or use of many resources. Decisions on designating areas must be made on a case-by-case basis only after careful analysis.

Other comments related to determining economic values, meeting resource demands through careful utilization and cultural treatments, wilderness classifications, land management, and herbicides. A number of other issues emerged or resurfaced and are listed below, not by priority:

Acid Rain - What is the Forest Service position, program? This area needs more emphasis.

Deficit Timber Economics - Selling public timber for less than sale cost. This creates an artificial and unsustainable economy.

Multiple Use - Need to regain, retain, and maintain stewardship for the land and balanced consideration for all resources.

Politics and Land Management - Reduce the influences of politics on land management planning.

Economics - Budget to achieve targets; make planning more market oriented.

Water - Concern for protection of water quality; implications of increased water yields.

Herbicides - More closely consider hazard, use, needs; need for worst-case analysis.

Clearcutting - Concern for impacts of clearcutting on soil, wildlife, water quality, anadromous fish, biomass utilization, and smoke management.

Tribal Concerns - Protection of treaty rights and consideration of religious and cultural values.

Biological Diversity - Scientific importance of old-growth forests (West). Policies for and distinction between hardwood forests and lowland plantations (East).

Issue 1 - Minerals

Some respondents favored mineral development that is regulated and does not damage other resource values. Others commented on minimizing development on National Forest lands, or that development of the subsurface values are greater than those on the surface.

Minerals management on National Forest System land is enigmatic; oil and gas resources get less than adequate attention from the Forest Service; subsurface development appears to be subordinated to surface resource protection even though subsurface harvest may be in the national interest.

Mineral resource exploration development can occur without severely damaging timber, wildlife, or water quality while generating substantial resources, more employment, and improving local living standards.

Encourage mineral development by establishing reasonable regulations, prompt permitting, and administration by knowledgeable persons. Streamlining of permitting and leasing, and improving access should be considered only if they can be accomplished without significantly compromising other important forest values.

Inadequate emphasis on applied mineral research and exploration; concur with need for research to ensure that disturbed site areas are adequately reclaimed.

Make every effort to curtail mineral exploration and development activities in classified and wilderness study areas. Congress needs to amend the antiquated mining laws.

Emphasizing energy minerals and minerals of strategic importance seems to favor developers' interests on National Forest lands. What kinds, amounts, and locations are found on private forest lands? Don't subsidize industry at expense of other interests.

Allow mining in National Forests only in time of national emergency; allow exploration where not detrimental to fish and wildlife, but not on National Forests.

Issue 2 - Range

Respondents expressed concern that overgrazing not be allowed and that fair market value be collected for grazing fees. Strong support for managing rangelands was evident in the comments.

Overgrazing reduces watershed value and forage. Very damaging; remains a high risk for fragile soils; is not a compatible mutiple use in the high mountain areas.

The cattle are trampling and destroying far too much of the winter feeding range of deer and elk. At high elevations they steal pasture from wildlife. The public should be told of overgrazing effects on areas diverse in plant species.

Grazing should be reduced to protect rangeland resources. National Forest System rangelands are dominated by management for livestock grazing.

The Forest Service should have a fee system that charges fair market value and covers or exceeds the cost of administration and range improvements. Those who hold grazing allotments should pay higher fees for their rights. Grazing represents a subsidy to a small interest group. The rancher also needs assurance of benefit from investment.

Range management investments are overlooked because the AUMs are produced whether the range is managed or not.

Legislation to provide grazing fees that achieve fair market value and recover the cost of administering permits is needed.

The alternatives should have a greater emphasis on range management.

Issue 3 - Recreation

Those respondents addressing this issue favor an increased support for recreation. Some prefer the least capital investment with many large, unimproved camp and picnic grounds. Many who addressed this issue asked for buffer strips along roads to maintain primitive appearance.

Emphasize and provide for undeveloped backcountry; provide for dispersed recreation with the least capital investment; keep campgrounds and picnic areas open; create many large, unimproved camping areas with road access; meet the growing need for both motorized and nonmotorized winter recreation; fill the gap between wilderness and full development with a system of low development.

Need more funding and support for recreation; make recreational uses of Forest first priority; if recreation and wilderness can't be optimized, pick recreation.

Civilization is being encroached on by wilderness and roadless recreation areas. People capable of backpacking benefit while the elderly, handicapped, and families with small children are eliminated.

Recent Forest Service policies damaged visual quality; tourism warrants retention of primitive appearance along routes into and out of Alaska. Leave 100-foot strip of undisturbed timber and unmined land next to national, state, and county roads (Alaska).

Recreation and wilderness areas are more important in the East due to Forests being close to urban areas, not enough parkland for those with increased leisure time and awareness of the environment.

Do not allow timber cutting or road building in National Forests to the detriment of recreation, plant, and animal life.

Manage government lands and waters with an emphasis on outdoor recreation; need to more fully consider any special areas.

Wiping out trail locations would be devastating to recreational values; a certain amount of dead timber needs to be left for wildlife needs.

Issue 4 - Wilderness

This was the most often mentioned issue. The highest proportion of the comments was from individuals, much of this from a form letter calling for a cap on wilderness. All categories of respondents commented. Comments were mixed, with more opposed than in favor of additional designation. Many called for resolving this issue soon.

Cap wilderness at 31.9 (some recommended 30) million acres, the Forest Service RARE II recommendations.

In favor of wilderness for the future; its true economic value is yet to be recognized. It is a multiple-use designation because it provides recreation and wildlife, fish and watershed protection; it is the foundation of all land and water resources.

Blanket decisions on wilderness acres cannot and should not be made. Case-by-case, area-by-area analyses must provide the basis for management and allocation.

Inadequately addressed in DEIS; does not provide recreation desired by most Americans, therefore, is unfair; precludes management for a healthy forest and future needs of our Nation; is too restrictive to be considered multiple use.

Don't increase timber sales and grazing into wilderness and roadless areas. Set aside land for wilderness.

Promotion of wilderness designation in areas considered to have significant mineral potential should be done with extreme caution and through careful evaluation of resource values. Caution against use of wilderness designation as a means of preventing development.

Wilderness designations allow limited management choices, use of nonmarket resources, opportunity to use forest products, and no opportunity to use nonrenewable resources. Locking up areas in wilderness has the effect of precluding future water development (West).

User education and information is needed to shift use from older, better known areas to newer, lesser known areas.

Issue 5 - Departure

This issue continues to divide publics into those who would prefer to liquidate old growth and replace it with faster growing timber, and those who want to maintain a nondeclining, sustained yield. Argumentation is presented in the comments.

Allow departures on timber harvest to speed removal of decadent, old-growth stands for greater dollar return to the Treasury and replacement with faster growing timber.

Base timber yields on nondeclining, sustained yield with no departures; continued harvest substantially above this is harmful in the long term.

Departures can amount to reforestation delays and failures in parts of the western United States.

Makes compliance with Threatened and Endangered Species Act impossible; would be devastating to fish and wildlife; no real sound, rational justification for use of departures to liquidate old growth; accelerated harvest of old growth is unpopular; get smallest departure to assure place for wildlife; species diversity can't be measured by dollars and cents.

Although NFMA provided for departures, the Forest Service is violating the intent by promoting departures as standard operating procedure. NFMA requires departures to be part of individual Forest Plans, and it is therefore inappropriate to program departures into each alternative.

Treatment of the departure issue is inadequate; analysis of departures should be conducted with alternatives, not between alternatives. Need an alternative with low timber harvests (be sure FEIS picks an alternative with less than 4.5 billion board feet for Region 6).

All sales should be cost effective; concept of deficit spending of our resources should be curtailed or eliminated; don't approve of continued deficit sales and road building.

Issue 6 - Biologic Potential - Timber

This issue received only a few comments, submitted by individuals and businesses.

Increased timber harvest will facilitate greater growth rates and maximize the biologic potential of National Forest lands.

Biologic potential of timber growth at higher elevations and on poor soils is overestimated.

Expand perspective to include in inventory and planning, all land where trees and shrubs dominate (swamps and bogs, for example). Include for possible future use the perspective of both above- and below-ground portions of trees and shrubs (biomass).

Most factors like reforestation, lack of thinning, mortality and growth losses are the result of management problems due to high-yield forestry.

Issue 7 - Utilization of Timber

A clear message that more complete use of wood fiber would be beneficial came from those who commented. There was strong support for more research and technology transfer to reduce waste.

What will be the effects on natural restoration of soil nutrients with the increased utilization of fiber waste and slash off the site?

Would like to see better coordination with the States regarding slash and smoke management, with special emphasis on forest waste utilization rather than burning.

The benefits and cheaper cost of structural flakeboard might cause it to replace plywood for some construction uses.

Might increase demand for hardwood and keep prices down.

Meet demand for products through planting and careful use of timber cut; more fully utilize the pinyon-juniper in Nevada.

Provide technical assistance to loggers and processors for efficient use of wood.

Seed-money should be allocated to entities which can bridge industry, academia, and government clientele with a more objective, broader service and stimuli for technology transfer of forest products R&D to industry.

Substantial increases in the sale of federal timber must take place in the future to assure a healthy forest, one with a minimum of dead, unutilized forest floor residue which markedly increases the chance of severe fires, one with new tree reproduction for the wildlife to feed on, and a forest which plays an important part in helping to meet the future wood product needs of the Nation by reducing dependence on foreign sources.

Issue 8 - Wildlife and Fish

Those who commented on this issue were very concerned with any management policy that would cause reduction in wildlife populations, both game and nongame species.

Concerned about maintaining wildlife populations, both hunted and nonhunted; fish and wildlife retention and protection needs more emphasis; restoration of anadromous fish habitat is long overdue; sustained yield must be applied to anadromous fish; good fish and wildlife management can mean hands off.

Tribal commission extemely dismayed at complete lack of responsibility Forest Service has taken to protect anadromous fish (West).

The 1985 RPA represents a retreat back to timber-first days; increased timber production would decrease cover and species diversity on National Forests and lower water quality.

Recommend limited system of all-weather or upgraded resource roads and the use of permanent and seasonal closures to restrict vehicular travel; do not need a 50-percent increase in roads from RPA 1975.

Unlikely that compliance with Threatened and Endangered Species Act could be maintained for any alternative given genetic isolation of spotted owl populations; old growth should be maintained.

Not practical to further erode habitat potential for wildlife. Increased timbering and other development would eventually erode dependent wildlife populations and possibly also increase arid land nationwide.

Issue 9 - Nonmarket Economics

This issue was only moderately responded to, much of the response was from individuals and some from conservation groups and businesses. This is one of the few issues that received comments from State governors.

The concept of user fees has merit; include wilderness areas. Users must pay their share for resources provided at a cost commensurate with their value.

The DEIS has a strong bias in favor of timber management and against nonmarket values. It is inaccurate to include wilderness and wildlife with such resources as timber, minerals, water, and range in determining the value of resources available; question methodology for determining worth of nonmarket items.

A major problem with economic modeling in RPA is the focus on direct cash payments to the Treasury. This focus ignores tax revenue to Federal, State, and local coffers from income, sales, excise, inheritance, and other taxes associated with forest resource activity. It leads to an undue emphasis on recreation user and grazing fees and ignores the contribution of indirect returns.

Assigning benefits in monetary terms to nonmarket resources is good, yet assumptions lead to questions of validity of conclusions that PNV of all alternatives is positive.

Future economic demands will increase market goods; this in turn will increase need for Forest Service to give special emphasis to nonmarket outputs; nonmarket resource dollar values need to be compared with values of marketable resources to establish priorities.

Alaska is of special interest to the rest of the world due to its fish and wildlife, scenery, remoteness, and high environmental quality; keep it that way.

Squandering lives of trees, birds, insects, and deer is something few of us can afford or condone. Need support for wildlife and fish, wilderness and nonmarket resources.

Seems obvious that the value of nonmarket resources like wildlife cannot remain constant if the supply decreases; question the dollar value assigned to them.

Comments on Alternatives

As noted earlier, the focus for comments was the alternatives. The response coding system allowed for respondents to support only one alternative, as a decisionmaker would. Con statements were recorded for each alternative a respondent addressed negatively. The number of comments listed under each alternative were designed to reflect the range of alternatives and do not necessarily reflect any given number of responses.

The table indicates that alternatives 3, 4, 6, and 7 differed by geographic region.

All alternatives received comments. Alternative 8 received the least. When considering form letters, Alternatives 7 and 1 received substantially more comments than any other alternative. Alternative 3 followed. Alternatives 7 and 1 drop to near the lowest when form letters are excluded.

Alternative 3 received the most supportive comments, followed by 6. Next are Alternatives 2 and 4. Alternative 9 received the most negative comments, followed after a large gap by 2 and 5. Alternative 6 received the least, Alternative 3 the next least negative comments.

Response to Alternative 6 showed the Public category of respondents to be neutral, while the Other category comments were extremely positive (see page M-2). Conservation group response on this alternative was negative. The eight tribal government respondents supported Alternatives 3 and 5.

Overall preferences and differences by geographic region are shown in the following table:

Overall Alternative Preferences

	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 8	Alt 9
All	-	-	+	-	-	0	-	-	-
East	-	-	+	0	-	+	0	-	-
Rocky Mtn.	-	-	+	-	-	+	-	-	-
West	-	-	+	-	-	0	-	-	-
Wash., D.C.	-	-	-	-	-	-	-	-	-

0 Approximately neutral.
\+ Positive
\- Negative

This section addresses each alternative and then displays comments on different alternatives for National Forest System, State & Private Forestry, and Research. The document drew considerable comment about new alternatives. The recreation form letter recommended Alternative 1 for dispersed recreation and Alternative 7 for developed recreation. Forty other respondents suggested additional mixes of alternatives.

Alternative 1 - Constant Outputs

The majority of the respondents commenting on Alternative 1 opposed it (7 to 1). Most were individuals. Overall response did not change by geographic region. Besides individuals, the greatest number of con responses came from conservation groups, followed by business commodity groups. The most other negative comments came from state agencies along with a few local agencies.

Pro Comments:

Comes nearest to a balance in multiple-use management of forest lands. Reasonable compromise between conflicting demands while having less impacts and maintaining environmental quality.

Best meets projected nondeveloped recreation needs on National Forests.

Will provide lower levels and halt increases of Federal expenditures.

Has benefit of low cost.

A good level of nondeveloped recreation. Would cap wilderness at RARE II recommendations.

Like this alternative coupled with Alternative 3, with an emphasis on nonmarket outputs, especially wilderness and backcountry preservation.

Con Comments:

Falls short of producing outputs and meeting demands required by the American people. Does not meet goals or respond to increasing demands for goods and services.

Underutilizes the available resources. Not good use of our natural resources. Perpetuating losses in overmature forests is expensive.

Too much emphasis on timber and range; both should be decreased instead of increased.

Does not allow for balanced multiple use management; more effort needed in amenity enhancement and noncommodity goals.

Does not express concern for already ailing environment nor provide adequate protection to the resources, particularly concerning efforts toward fish and wildlife, water, and wilderness impacts. Does not meet Threatened and Endangered Species Act objectives.

Needs increased emphasis on Research and State and Private Forestry along with more funds for Research; urban forestry too low. More emphasis needed on international forestry.

Too much emphasis on market outputs and will not be able to sustain present timber cutting levels. Promotes short-term gains despite consequences.

Too much emphasis on wildlife and recreation.

Unrealistic and unacceptable in view of the unforeseen influences which may occur.

Timber harvest, particularly in old growth stands, may have to be reduced to avoid adverse impacts on wildlife habitat, fisheries, recreation, and other values.

Excessive constraints on mineral industry.

Other Comments:

Anadromous fish population declining. Timber harvest, new roads, and increased water yields have detrimental effects and impacts on fisheries resources and habitat.

Should consider low level of capital investment expenditure for road and high level for recreation development.

Sets what should be the minimum acceptable air quality for all alternatives.

Research must consider acid rain.

Alternative 2 - High Market

Alternative 2 was not favored by a majority of the respondents (3 to 1). In all regions, individuals offered the greatest bulk of the con remarks, with conservation groups and a few business commodity groups also opposed. The support came primarily from individuals and business commodity groups with a few comments from State agencies. In the West, commodity groups showed more support than individuals; this trend was reversed elsewhere.

Pro Comments:

True multiple use; best blend for stable economic growth, development, and recreation. Will best maintain a healthy economy by increasing productivity and jobs. More dollar returns to State and Nation.

Highly responsive to projected needs of the Nation, especially market resources. Emphasizes commodity production and stability to meet present and future demands. Most economical, cost-effective, and efficient use of Forests.

Appears to be best mix of timber available for harvest along with higher reforestation and timber stand improvement. Would reduce Canadian imports and moderate the increase in wholesale lumber prices.

Maximizes State and Private Forestry efforts and funding.

Good research potential in areas of insects, fish, drought-resistant stock, regeneration, tree growth, and wood processing.

Recreation and wilderness more comparable with actual demand.

Prefer this alternative with a different mix of priorities in research.

Include recreation fees.

Con Comments:

Too much emphasis on timber production, other commodities, and economic advantages with significant expense to amenities and the environment.

Does not express concern for an already ailing environment. Wildlife, wilderness, watershed, fisheries, and threatened and endangered species not protected.
Not cost or goal efficient; question market demand and long-term outlook. Benefits too narrow a group; an even-handed approach would better satisfy different user groups.

Fails to meet Multiple Use and Sustained Yield Act objectives. Provides an unsatisfactory stewardship of public lands and poor balance of resource management.

More funds needed for tropical and urban forestry. Research misdirected and needs more emphasis on wildlife research.

Not enough roadless recreation and wildlife priority. Would require planning revisions.

No mention of renewable energy resources.

Long-term declines in fisheries habitat in Region 6 violates Washington water quality standards.

No emphasis on minerals resource.

Other Comments:

Users of noncommodity outputs should pay the costs, such as with recreation user fees.

Would provide increased emphasis on water quality improvements.

Alternative 3 - High Nonmarket

A significant majority of respondents supported Alternative 3. Comments came mostly from individuals. Nearly all business-commodity groups commented unfavorably, while State agencies provided a number of pro comments. Conservation groups were in favor of the alternative by 2 to 1. In the West, State agencies' comments were split evenly between pro and con.

Pro Comments:

Good balance of goals with perspective on how forests should be managed; commensurate with national, regional, and local needs.

Emphasizes nonmarket values giving equal consideration to amenities. Protects water, soils, wildlife and fish habitat, and threatened and endangered species. Provides a commitment to multiple use and conservation. Responds to the need for ecosystem and environmental protection and the overall needs of future generations.

Provides land managers with opportunities to make allocations at a later date.

Addresses need to properly fund State and Private Forestry program.

Provides for moderate levels of timber production, range, wildlife, and watershed improvements.

Greatest benefit to recreation, wilderness values, and tourism.

Best combines commodity and amenity outputs; both the public and business benefit. Amenity enhancement will provide more job opportunities. Cost/benefit ratio is among highest to consumer and national Treasury.

Fewer subsidies, no long-term budget constraints.

Has the most to offer regarding cultural resource preservation.

Only alternative worth consideration. Modify to eliminate timber type conversion and plantation forestry.

Will definitely boost the attention and funding given to developing new recreational facilities and opportunities. Will improve Forest Service image.

Provides energy and mineral resource development.

Leave as is to favor wildlife and provide for roadless areas, but reduce recreation development; increase emphasis in timber production and minerals and energy.
Investment in fish habitat protection and enhancement will increase fish production by 10 to 20 percent.

Con Comments:

Does not provide balanced management of all resources. Out of balance on the side of nonmarket and amenity values.

Timber harvest and grazing levels should be reduced.

In time will lead to reduced market outputs and high prices, thus reducing living standards and/or creating inflationary pressure. Does not efficiently manage National Forest lands for optimum return.

Does not go far enough to protect environment or emphasize conservation.

Too much wilderness and excessive recreation use.

Wilderness budget too low. Additional wilderness options need consideration.

Inadequate timber outputs.

Too much emphasis on minerals and energy.

Needs emphasis on minerals research.

Large decline in old-growth timber is unacceptable.

Attempt to shift production load to private land is bad.

Has adverse economic impacts to timber-dependent communities. Will tie up too much productive land.

Timber production drops drastically in 2030 and will create adverse economic impacts.

Disproportionate research funding in favor of nonmarket values is not acceptable.

Not a truly nonmarket alternative due to substantial timber outputs. Feel the assumption that a base level of timber harvest must be maintained is unjustified.

Other Comments:

Would provide best array of benefits to fish and wildlife resources, but realistically may not achieve the necessary multiple-use mix.

Increase incentives for more productive use of private lands.

Greater emphasis should be placed on the nonmarket value listed.

State and Private Forestry and international forestry should receive high level of support.

Does not go far enough. Water quality will be lowered due to water yield and road construction.

Projected outputs and implied funding levels for trail construction, maintenance, recreation management, and facility construction in Alaska are appropriate.

Alternative 4 - High All Resources

Approximately 20 percent of all respondents addressed this alternative. Of these responses, 3 out of every 4 were unfavorable. In the East, respondents slightly favored the alternative (not statistically significant).

Pro Comments:

Generally favor due to positive aspects like efficient processing of mineral leasing, management of lands and resources, and good format guidelines.

RPA fulfills legal mandate with this alternative.

Multiple-use approach demonstrated; good balance between resources; provides high-intensity management; most productive.

Meets or exceeds all the goals; goals are reasonable and balanced; both market and nonmarket requirements are met.

Protection of surface resources and environmental quality is provided during mineral exploration and devolopment.

Conforms to Assessment due to flexible objectives.

Best for recreation with recreation values at highest potential, use at highest level, and direction for recreation research.

Good balance of commodity and amenity outputs.

Forest Service management and recovery objectives are met for endangered, threatened, and sensitive species and carrying capacity for species commonly hunted and fished increases by 5 to 10 percent.

Gives adequate attention to needs of industry.

Generates the maximum economically viable level of timber outputs; higher level of regeneration and other timber management.

Shows good emphasis on acid rain research.

Con Comments:

Costs are too high; no budget constraints; poor cost/benefit ratio; analytic base questionable.

Priority for industrial resources over others creates bias. High production rates for forest and mineral products detract from the quality of recreation, wilderness, and wildlife. Too much energy and range production.

Jobs and outputs would be high at the expense of amenity values.

Intensive multiple-use management is not achievable or reasonable; too many conflicts between uses; exploitative; goals too high (timber, minerals, and roading); makes unrealistic assumptions about needs and capabilities; imbalance of uses.

Discussion of social effects is blatantly biased towards commodity emphasis. Addresses employment only in the traditional market activities.

Ability to maintain high outputs for market and nonmarket resources and specifically produce wildlife outputs is doubted.

Increase international forestry.

Provides no emphasis on minerals research.

Timber targets would result in fish habitat losses (West).

Reduce timber sales.

Other Comments:

Minerals emphasis supported, but need to accelerate processing of mineral applications (Alaska).

Intensify timber harvesting during first rotation to insure vigorous, healthy stands and to minimize timber loss due to cutting constraints.

Alternative 5 - Reduced

The majority of respondents commenting on Alternative 5 opposed it (7 to 1). Tribal government was the only respondent group that supported this alternative. Preference did not change by region. Many respondents commenting on this alternative discussed it in unison with and in the same manner as Alternative 1.

Pro Comments:

New federalism approach would reduce overemphasis on Forest Service land and resources and reduce Federal government influence; each State should manage its own land and would become more self-sufficient. Encourage State and private sectors to increase outputs!

Gives strong support for reduction of general forest use and protection of natural resources for future generations. Existing values of fisheries, tourism, and timber need protection; of all alternatives, this best protects resources and tribal treaty rights.

Twenty-five percent reduction would contribute to reducing Federal budget deficit.

De-emphasis on international forestry good; keep our technical/managerial breakthroughs to ourselves.

Good and justifiable funding level for rangeland activities.

Outputs and development pressure would drop, but backcountry use, wildlife, and certain other uses would prosper with a hands-off approach.

Consider the lowest capital investment for roads, along with higher capital investment for recreation (similar to Alternative 3).

Con Comments:

Is not politically feasible or responsive to reduce Forest Service management responsibilities. State and Private Forestry can't meet national production goals without improving productivity; would allow private sector to exploit State/local governments.

Too low level of public investment; must prepare for Nation's growing demands. Would adversely affect industries and communities.

Fails to meet management objectives and recovery schedules for at least two-thirds of the 15 selected threatened and endangered or sensitive species. Violates NFMA because of these impacts.

Does not express enough concern for already ailing environment and does not adequately emphasize renewable resource use. Levels for some resources are simply too low. Neither uses nor guards resources.

Can't expect objective analysis from an agency that would be reduced.

Timber harvest is reduced, research and development is all but eliminated, and all forms of technology transfer are sharply attenuated. Has no increase in wilderness or recreation opportunities, little land reclamation, and poor, long-term expectations for soil productivity and water quality. Result can only be stagnation of the economy of the areas adjacent to the National Forests.

Decreases in recreation funding would result in closing many recreation facilities and reducing most services. Demand for most recreation activities will increase.

Nation does not need nor can it afford the luxury of having large tracts of roads idle.

No allowance for future energy resource development or attention to minerals. Energy produced would decline 50 percent by 2030.

Long-term declines in fisheries habitat in Region 6 would violate Washington State water quality standards.

Alternative 6 - Implement Plans

Respondents commenting on Alternative 6 favored it by a very small margin (not statistically significant). The strongest support came from individuals and State agencies. Those opposed included individuals, conservationists, and commodity business. Others providing comments included Federal and local agencies, and State and local elected officials.

Pro Comments:

Reflects the compromises made with the various publics during Forest planning and reflects the demands of the Assessment even though it does not totally meet all demands. Balances Regions' needs with State resource plans, including forestry, recreation, wildlife, and water.

The best biological mix of resource activities at reasonable costs. Best balance among all resource activities and related engineering activities. Meets legal requirements.

Increased employment creates better economic climate without damaging resources.

After each National Forest has spent so much time gathering public input to their plans and running sophisticated computer programs, how can they not be implemented? To do anything but implement the Forest Plans would be a gross waste of time and tax money, an example of extreme government mismanagement, and would result in a complete loss of credibility with all the people who have taken the time to provide input to the Forest Plans.

Shows a strong commitment to international forestry programs and to research.

Would meet or exceed Forest Service management objectives and recovery schedules for endangered, threatened, and sensitive species; during mineral exploration and development, equal emphasis would be given to protection of surface resources; under State and Private Forestry, watershed protection and improvement activities would be fairly high priority; research on effects of acid rain on forest ecosystems and research on water yield, water quality, and aquatic habitat would be given fairly high priority.

Developed from National Forest System and State forest resource plans, seems to reflect a moderate and thoroughly reasonable approach to resource programs through the planning period. Provides opportunities to improve balance of resource production on public and private lands and increase benefits to the public.

A national program, based on the professional judgements of the field-level resource managers and founded on the actual, on the ground situation on each Forest. Significant planning already completed; compromising increase in timber, grazing, mining, recreation, State and private land, and wilderness; adequate emphasis for wildlife carrying capacities and continued research.

Allows for increases in recreation use, planned timber sales and production.

Meets objectives for fish and wildlife.

Gives allowance for timely processing of mineral permits, yet allows for improvements of procedures to protect surface resources.

Con Comments:

Alternative not cost or goal efficient.

Timber harvest too high. It allows harvest in upper watersheds with potential adverse, cumulative, downstream impacts. Also too much emphasis on timber, range, minerals, and energy.

Recreation and wildlife management should be emphasized more.

Water was not addressed.

More needs to be spent on recreation and wilderness research.

Forest Service should not be involved in State and Private Forestry except for research.

No concern for ailing environment and conservation.

Too much emphasis on nonmarket (wilderness, fish, and recreation).

Does not appear to adequately optimize timber and grazing outputs.

Wildlife emphasis is not consistent Forest to Forest, Region to Region.

Should have moderate to high research programs instead of the highest level.

Assumes the planning process has done its job. The Forest Service track record in this matter does not bear this out.

Overemphasis on increasing road building.

Provides for less recreational use while still performing a reasonably good job of balancing the conflicting needs and uses.

Other Comments:

Trail construction and maintenance, recreation management, and facility construction are more appropriate in Alternatives 3 and 4.

With deletion of timber departure option, multiple-use outputs must be driven by Forest level planning. Avoid departure which has been prevalent from sustained-yield concept.

Increase emphasis and funds for State and Private Forestry.

Modify to meet needs rather than wants; concern about continual increase without jeopardizing future supplies.

Shows a solid respect for the basic biotic integrity of the system without disregarding economic realities.

Close to satisfying all national goals; don't overlook national goals.

Reasonable increase allowing renewable energy resource development.

Alternative 7 - High Present Net Value

Respondents offered little support for Alternative 7. The ski group form letter supported the alternative's developed recreation level. Otherwise, overall comment was negative.

Pro Comments:

Offers timber and range at high, yet achievable, net values. Forests can be harvested economically without irreversible damage. Forest harvest rotation will be good for a wide variety of recreational opportunities. Recreation will become more efficient and effective. Economically efficient. Offers excellent wildlife and fish possiblities.

Would provide the greatest return at an acceptable cost for the majority of the American people.

Additions should increase grazing, recreation, and wilderness user fees to cover all administrative costs; place intensive timber management on lands capable of producing 50 board feet per acre per year instead of 20; complete RARE II actions and enter nondesignated areas for multiple-use management; minimize additional wilderness designations; increase recreation available by ground transportation.

Two legislative proposals (Rangeland Improvement Act and Recreation Fees) should be included. Alternative 7 attractive from the economic standpoint.

Lands should be allocated for skiing before, not after, overcrowding of ski areas occurs; developed, nonwilderness recreation should have top priority; emphasis needs to be placed upon expanded private sector opportunities to provide recreation; and resource development goals should be at a high enough level to provide recreation of all kinds, as well as energy, timber, mineral, water, and other needs of a modern society.

Con Comments:

Too commodity oriented. Timber, range, and mineral production at the expense of nonquantifiable resources: soil, water, visual, old growth, fish, wildlife, and cultural resources.

Economic efficiency is a poor measure for resource management, especially with long-term investments.

Too much emphasis on recreation, wilderness, and wildlife. Doubt ability to produce fish and wildlife outputs.

Cumulative effects have not been researched.

Not enough wilderness added.

May be illegal by not attempting to maintain a viable population of threatened and endangered species and not contributing to their recovery. The probability of their extinction may be increased. Quantify the relationship of this alternative to management objectives and recovery schedules for T&E species.

Alternative 8 - 1980 RPA

Fifteen percent of respondents, mostly individuals, expressed an opinion about this alternative. Of these respondents, 9 out of 10 opposed it. Conservation groups who responded were unanimous in their opposition. The minimal support for the alternative occurred mainly in the East.

Pro Comments:

Provides balance of resources that benefits all; most closely continues 1980 balance of resources; productivity of land would be maintained even while all resources are managed at a high level.

Meets the legal mandates of the Resources Planning Act.

Provides best support to private sector and State and Private Forestry.

Supports high level of research in all areas of the environment, consistent with other specified programs and stated goals of the alternative.

Makes provision for and best meets international forestry goal.

Timber, minerals, and range appear adequate for national interest.

Gives consideration for endangered, threatened, and sensitive wildlife and fish species.

Shows a solid respect for basic biotic integrity of the system without disregarding economic realities.

Increases carrying capacity for species commonly hunted and fished.

Water quality and air quality goals would be fully met.

Management emphasis for protection of surface resources and mitigation of adverse environmental impacts would be high during mineral exploration and development.

Allows supply to keep up with demand, particularly wildlife and timber; timber sales increase.

Revenues are higher than most alternatives; fair return to government.

Recreation use which meets quality standards increases; riparian habitats improve.

Wilderness areas show potential increase.

Con Comments:

Not based on latest resource and condition information; without logic; produces nothing and does not meet national goals; staying at 1982 output levels is poor; will not meet future needs; based on inaccurate data.

Commitments to international forestry goal are too high; not cost effective; reduce because of domestic funding problems.

Too little research shown.

State and Private Forestry and Research programs are too high; not cost effective.

Results in high output resource exploitation.

Cultural and visual effects are too disruptive. Too much emphasis on visuals.

Provides no concern for ailing environment or conservation; downward trends in noneconomic environmental areas.

Timber outputs are too low; difficult to determine. Too much logging; too heavily weighted toward timber.

Does not emphasize minerals research.

Creates adverse impacts on watershed.

Does not provide for consideration of Regional and local plans.

Overly concerned with income; possibly expensive in long run.

Provides too much emphasis on wilderness and fish and wildlife.

Other Comments:

How can fish capacity increase when RPA 1980 declined?

Endorse continued research at Alternative 6 or 8 levels (Alaska); alternative less attractive to Alaskans because of problems experienced with RPA programs to date.

Favorable returns to Treasury and capital investment for recreation.

Acceptable even with less emphasis on fish and wildlife.

High priority with high level of resource management, cost, research, and protection.

Alternative 9 - High Productivity

Twenty-four percent of all respondents, mostly individuals, offered an opinion on Alternative 9; of these respondents, 99 percent opposed it. Conservation groups and State agencies opposed the alternative while commodity business groups expressed very light support. In proportion to the total number of comments received, most of the supportive comments came from the East.

Pro Comments:

Demonstrates high productivity through increased technology, i.e., the high level of market and nonmarket outputs necessary at all levels in our expanding economy; provides adequate protection and support.

Allows use of strategic mineral resources and benefits local economics with extractive industry jobs.

Supports concept of user fees and higher recreation fees to offset administrative costs.

Addition of this alternative is a positive step in broadening decision space for selection of a preferred alternative.

Provides good emphasis for timber by recognizing the Nation's need for increased building materials and the availability of large volumes of mature, overmature and diseased timber on protected and unprotected lands that lends support for a greater timber harvest. Keeps lumber costs down. Increase in harvest of some species may be desirable.

Wilderness, fish and wildlife are kept at an acceptable level.

Con Comments:

May violate the Clean Water Act, the Endangered Species Act (does not maintain viable populations), and National Forest Management Act. Relaxes already lax standards. Violates multiple use concept, has poor balance and poor land stewardship.

Benchmark analyses affect alternative's credibility; unnecessarily and unrealistically places timber production at biologic capability.

Reflects low present net value.

Timber volume would depress the timber market; cutting that much timber will drive prices down or trigger more exports from private lands as federal timber cheapens. Though increasing exports may help the balance of payments deficit, it results in the harvesting of marginal lands where watershed condition and wildlife habitat and fisheries ultimately pay the price. Timber emphasis may topple and crush nonmarket intangibles. Lack of ability to regenerate renewable resources at a pace equal to their use.

Reflects anticonservation and anti-environmental quality sentiments with decline in fish habitat and productivity.

The 103 percent increase in timber harvest, and more grazing than National Forest rangeland could withstand without substantial and probable irrevocable damage, reflects irresponsibility.

Provides no balance between market and nonmarket resources.

Reduces wilderness, wildlife and fish, recreation, and other nonmarket values. Least desirable alternative.

Decimates forest recreation, scenic beauty, and wildlife in 20 to 25 years; borders on exploitative use.

Adverse social and environmental effects make it unacceptable.

National Forest System/State and Private Forestry/Research Mix

Although the focus for comments was the alternatives, the coding system allowed analysts to identify recommended modifications of alternatives that were a new mix of proposed National Forest System (NFS), State and Private Forestry (S&PF), and Research program alternatives. As an example, a different mix might be suggested as Alternative 1 for NFS, Alternative 3 for S&PF, and Alternative 6 for Research.

In the same proportion as overall response, most comment on this topic was by individuals, followed by business-commodity and conservation groups and State agencies. The largest response was from the East. Total response was low. Following the new mix of alternatives are general comments about State and Private Forestry and Research, mostly from State governments.

Under National Forest System, most comments on the new mix addressed Alternatives 7, 6, and 3. Under State and Private Forestry, most comments on the new mix addressed Alternatives 6 and 2. Under Research, most comments on the new mix addressed Alternative 6.

Mix 1

NFS: Alt 3 - Offers the best opportunity for fish and wildlife management.

S&PF: Alt 8 - Provides for almost twice the acreage of wildlife habitat improvement as compared with the other alternatives except 4.

Research: Alt 3 - Places emphasis on research relating to wildlife, wildlife habitat, outdoor recreation, watershed, use of fire for wildlife management and aquatic habitats.

Mix 2

NFS: Alt 6 - Output levels of these alternatives best meet the Nation's needs. High increase of costs to S&PF and Research needs curtailment.

S&PF: Alt 7

Research: Alt 6

Mix 3

NFS:	Alt 6 -	More acceptable because more timber will be produced and offered in Regions 8 and 9.
S&PF:	Alt 7 -	It generally meets industry goals at a more realistic funding level.
Research:		No comment.

Mix 4

NFS:	Alt 2 -	for wilderness, Alt. 9 for range, Alt. 6 for all other resources.
S&PF:	Alt 4 -	for wildlife and fish, Alt. 5 for minerals and energy, Alt. 2 for protection and support, no comment for wilderness and international forestry, Alt. 6 for other resources.
Research:	Alt 6	

Mix 5

NFS and Research:	Alt 3	
S&PF:	Alt 1	

Mix 6

NFS:	Alt 1 -	Provides for constant outputs through the year 2030. National budgetary emphasis should not be placed on the National Forest System.
S&PF:	Alt 2 -	Represents the majority of these lands; if emphasis is directed toward these lands the potential returns on investment are relatively greater. Strongly back expanded assistance to loggers and processors which will encourage more complete and efficient timber utilization.
Research:	Alt 1 -	No need for an increase in the research program is foreseen; would continue constant level and provide a mix of program outputs.

Mix 7

NFS:	Alt 6 -	Based on the professional expertise and public comments that were part of their development.
S&PF:	Alt 2 -	Better utilization of State and private forests in the Southern Region; will have far more positive social and economic impacts than increased production on National Forest lands.
Research:	Alt 6 -	Places the most reliance on this detailed planning process that identified research needs and priorities.

Mix 8

NFS:	Alt 6 -	Represents a balanced use of resources. Regional allocation of timber sales offerings appears to properly address anticipated demands.
S&PF:	Alt 7 -	Addresses the S&PF factor separately from the NFS, and with significant detail. This emphasis should continue and be even more detailed in future.
Research:	Alt 6 -	Of special interest is the increase in basic research and the Forest Service role in coordinating research in the forest sciences. Forest Service programs and studies should be examined and funds reallocated on the basis of merit and breakthrough potential.

Mix 9

NFS and S&PF:	Alt 2 -	A blend of Alternative 2 provides extensive forest management with reforestation and timber stand improvement.
Research:	Alt 6 -	Provides high level of long-run support for research needs, although it would be costly.

Mix 10

NFS: Alt 7 - Provides market support outputs.

S&PF: Alt 2 - Would be expensive, but results would justify costs.

Research: No comment.

Mix 11

NFS: Alt 2 - Best in light of wood supply for industry.

S&PF: Alt 1

Research: No comment.

Mix 12

NFS and S&PF: Alt. 1 - for timber, range, water, and international forestry. Alt. 3 for recreation, and Research protection and support. Alt. 5 for wilderness. Alt. 8 for wildlife and fish.

Research: No comment.

Mix 13

NFS: Alt. 1 - for timber because of sustained yield. Alt. 3 for recreation with more trail mileage. Alt. 3 for water because of water quality. Alt. 8 for grazing because of its long-term outlook.

S&PF: High Priority.

Research: High Priority.

General Comments on State and Private Forestry

If resources on private and State lands are to meet expected goals, then this area must receive increased emphasis. Assistance programs on private land must grow proportionately to National Forest System if national goals for 2030 are to be met.

Need to increase programs to ensure the contributions of State and private land to resource outputs in the future. States need to accept a greater share of this responsibility with accompanying reduction in Federal participation.

Reduce the number of proposed State and private forestry programs; they are not cost effective.

Question the capability of nonindustrial, private forest land to make a major contribution to long-term timber supply.

General Comments on Research

Research should be adequately funded to support the attainment of the goals outlined in both National Forest and State forest planning and should be accomplished before noncommodity resources are impacted.

Continued research is extremely important. It should be commodity oriented, but emphasis must also be commensurate with impacts on noncommodity (especially wildlife and water) resources. Funding should compliment the selected alternative.

Comments on Process

The public response analysis system was designed to capture comments that dealt with the document itself, and some specific process subjects. They are:

General adequacy of the document

Tie with the RPA Assessment

Tie with State plans, Regional Guides and Forest plans

Lack of a preferred alternative

Adequacy of NEPA compliance

Document Adequacy

Over 650 statements concerning document quality were received. A total of 86 statements complimented the document on its organization, displays, and thoroughness; 575 statements noted areas in need of improvement.

Here are excerpted statements on adequacy:

A rational effort to centralize management planning - a bang-up job. Excellent job of expressing how each alternative would affect environmental factors. Accurately relates supply and demand of renewable resources. Display of target effects on Forest, Regional, national levels is very valuable. Study guide was helpful. Overall organization is better than previous efforts - readable, understandable, well organized: preparers should be commended.

Program is more thorough: considers aspects of forestry that previous plans either ignored altogether or seriously slighted.

The report is a model of competence. The options seem well thought out and reasonable.

The results displayed seem to identify essential elements that are needed to evaluate the relative merits of the alternative programs and provide ample information for selecting a preferred alternative.

I commend the people who worked on this vast and awesome draft.

A major improvement in research coverage over 1980 RPA.

Will provide excellent guidance for the management and administration of the National Forest System, State and Private Forestry, and Forest Service Research. Will further cooperation between all land-managing agencies.

Generally both the quality and quantity of work that went into this effort is impressive. The RPA process represents a model of public participation in the governing process.

Another recommended program like 1980 with upper and lower bounds and no resemblance to any of the draft alternatives is not needed. The Report should clearly state the difference between the recommended program and the actual budget, and list targets that are not being met.

This document falls short of providing a wide range of alternatives. Extremely dissatisfied with alternative range; very restricted, lacks middle-of-the-road alternatives.

Too many alternatives to reasonably consider.

Reject all nine alternatives. Start over. Revise to show nondeclining even flow, actual consequences of change, resource balance.

Document is too general in scope and lacks detailed direction for State agencies to evaluate alternative Forest management within their States.

Specific resource values such as timber, are allowed to increase over time, while values for other resources apparently remain constant. This would suggest that the present net value estimates for each alternative are not realistic.

Entire document, especially the summary, is heavily biased in favor of market outputs, especially timber and minerals. How the National Forests will be managed is obviously predetermined.

Appears to stress need to convert National Forest System into a commercial exploitation system to decimate surface and subsurface resources found on National Forest areas.

Lacks evaluation of alternative futures.

Make grazing/range cost effective. No alternative maximizes potential.

Show the total roadless acreage given, so that a reviewer can weigh choices against a wilderness-first alternative.

Chapter 3 does not specifically mention the fact that thousands of RARE II acres are presently locked up from multiple-uses awaiting further study on wilderness designation. This significantly affects the current program by intensifying use on fewer acres.

Spending money to try to improve damaged habitat is not as successful or economically efficient as not destroying the habitat in the first place.

It is impossible to assess outputs of fish and wildlife by alternative because only two quantitative comparisons are presented.

Nonmarket values such as for wildlife and recreation need more consideration than maximizing values for rangeland forage.

Need more information and documentation on fisheries.

Commonly hunted fish and wildlife is overemphasized, importance of nongame species lost. Species diversity is not addressed. Reliance on Forest plans to protect species diversity, habitat, and populations is premature. Fish and wildlife are significantly undervalued, viable population levels not identified. Discrepancies exist in fish and wildlife use figures in text/tables. No specific statistics are presented for AUM goals in total and those diverted from wildife use.

Recreation is treated as a uniformly applied function across the country in all the alternatives. Legislative acts relating to Forest Service administered areas are not specifically addressed. Executive Branch policies may also have been overlooked. Specifically, Forest Service administered National Recreation Areas would be affected.

Needs more information on downhill and crosscountry skiing as the fastest growing recreation. Not enough attention to recreation.

It is naive to assume a single document can even begin to address needs of wildlife in the Nation, let alone range, mineral exploration, water, etc. Less than satisfied with the document as a whole.

Inadequately addresses water--water quality, nonpoint source pollution, and methods of increasing water yield.

Hydropower potential of rivers and streams on National Forests and effects of alternatives on existing and potential hydropower development needs to be addressed.

Not enough employment provided for; too little emphasis on the now, too much on the future.

All alternatives discriminate against the cattle industry.

Limiting the cost-effective analysis on range to future expansions without considering the present unjustifiably maintains grazing as the dominant use.

Private and Forest Service land management objectives conflict and are not adequately analyzed; mitigation possiblities are not explained.

A national program should reflect a strong commitment to complete the acquisition of lands within NF boundaries and, in appropriate areas, beyond existing boundaries if a strong case can be made.

The selected alternative should address more specifically the issues of unemployment, high demand/low supply, and high costs of construction materials. Eliminate activities such as environmental assessment surveys, planning, exporting of items which cannot now meet public demands.

Providing technical and financial assistance to private landowners or State and local governments is not mentioned in the range, recreation, wilderness, wildlife and fish, minerals and energy, and international forestry opportunity areas. Education programs are not mentioned under any opportunity area except protection and support. This lack of emphasis is not consistent with the very strong statements on the importance of assistance and education programs in the assessment supplement.

Nonindustrial timber supply is overly optimistic to the point of being wrong.

Need basic timber data that supports discussion of cubic foot volume yields from State and private forest lands.

Need to emphasize non-National Forest programs that encourage private timber growing investments. Consider uneven age management. Timber production levels don't meet projected demand. Need at least high, medium, and low demand levels as in 1980 RPA. Does not address wood product export. Growth rates inaccurate - not based on observed data.

Too much production emphasis placed on NFS lands; commercial forest land in private nonindustrial ownership has not been addressed in the depth needed to convey their importance in supplying timber to meet rising demands.

Development of Forest lands in urban areas may not be in tune with current politics, but this is what the planning process is all about.

Explanation needed on the relationship between USFS programs and other USDA agency programs.

Unclear explanation of the source of issues, goals, and opportunities.

Discussion of goals by branch (Forest Service, State and Private Forestry, and Research) is needed for clarity.

The RPA process should address important management issues which do not fit neatly into quantitative analyses that dominate the DEIS. Controlled burning and road closure are examples of such issues. In Colorado, roading is the most volatile issue.

Uncomparable terms: NFS program expressed as outputs, State and Private Forestry as few outputs but mostly inputs, and research as dollar inputs and no outputs.

Unclear description of the relationship between research problem areas and emphasis areas within goals; confusion in the explanation of range research allocations.

Integrate existing mining/minerals research information with that from other governmental organizations such as the U.S. Geological Survey and the Bureau of Mines.

1982 dollar value for research appears higher than reality.

Long-range research needed on effects of tourist industry; rivers, streams, and aquatic wildlife populations; soil and erosion; visuals; clearcuts; and minerals.

Use of outdated basic data, blatantly wrong management assumptions, and data manipulation at all levels have combined to produce a totally worthless document. Not enough data analyses; analyses too simplistic.

The DEIS is a complex document that mixes a lot of assumptions - basic economic theory, partial subsidy of market and nonmarket goods, an ideological interpretation of public goods theory, and the use of differing demand mixes - in a very confusing way.

Does not address or give policy direction for areas of special significance. Specific consideration should be given to locales with unique problems.

Washington Office direction that determines outputs is not needed. Outputs should be determined by capability of land to produce, not by politics.

Tables are inconsistent. Hard to move from one table to another. Should contain basic data rather than graphical summaries. Regional comparisons difficult since graphs have different scales.

Does not lend itself to clear detail at Regional or Forest levels. Inconsistencies between Regions.

Nowhere in the document is mention made of provision for avoiding damage to Native American religious sites. Potential impacts on traditional religious sites and practices ought to be at least mentioned in Social Effects and Civil Rights, Minorities and Women sections.

Deficient in addressing tribal fisheries, wildlife, cultural, and religious rights and concerns.

Format could be improved with greater definition of terms, interpretation of subject phrases, consistency in data, and number usage in comparison statements.

Every one of the basic assumptions is incorrect, some so far out as to be ridiculous, most not stated; technically unacceptable and disturbing. Economic analyses shallow, biased, and arguable. Shallow analysis on departure alternatives.

Grossly forbidding and confusing with conflicting statements; full of loopholes and intentionally complex with jargon. So complicated yet so general. Takes too much for granted. More concerned with what is not said than what is said. Impossible for layperson to grasp.

The section on Social Effects discusses economics and ignores lifestyle and quality of life. The statements saying Alternatives 2, 4, and 9 would provide increased opportunities for women, while Alternative 3 would not, are obviously biased and incorrect. Alternative 3 would provide more opportunities for women, while Alternatives 2, 4, and 9 would provide opportunities in male-dominated disciplines.

Need more time for public education to properly respond.

List of preparers includes neither a full-time wildlife biologist, nor a fisheries biologist; document reflects this.

Tie with the RPA Assessment

Approximately 8 percent of all respondents addressed this topic. Input came from individuals, conservation groups, commodity business groups, State agencies, and educational institutions. Respondents were mostly concerned with inconsistencies between past and present Assessments and in figures used in the DEIS compared to those used in the Assessment. While some reviewers felt the DEIS provided an excellent tie with the Assessment, most felt this tie could be improved.

The Assessment needs a closer tie with States.

Timber-demand projections differ between past RPA programs and the present program.

The Assessment overestimates timber demand.

The document ignores market conditions and national demands.

The goal for wildlife and fish does not recognize Assessment findings.

A better link is needed between wilderness needs identified in the Assessment and the amounts of wilderness in the alternatives.

Link between program alternatives with the implications section in the Assessment Supplement is missing.

The relative merits of the alternatives may ride on the uncertainty of the projected data noted in the Assessment.

The alternatives may be difficult to evaluate due to lack of fundamental data and due to the assumptions that were used.

Indian tribes were not consulted to determine fisheries, wildlife, and religious needs.

Consumption of red meat is overestimated.

Pacific Northwest sawtimber supply is underestimated.

Research is ignored.

Alternative 4 answers the Assessment, but is also the least attainable.

Tie with Regional Guides, Forest and State Plans

Approximately 7 percent of respondents addressed this subject. A high percentage of the State agencies commented on this topic, and mainly felt that the tie was good. Some comments were complimentary of the RPA 1985 DEIS, especially alternatives based on local and State plans. However, there were twice as many that stated an apparent lack of coordination between national and local planning, and many were critical of the low number of Forest plans that have been completed.

Adhering to Forest plans allows for local variations that, in the long run, will be most responsive to the needs of communities and of the Nation.

Only 5 of the 155 National Forests have released a final plan. This raises the question of source and reliability of the data base on which the nine RPA alternatives were generated.

The most reasonable alternatives appear to be those that rely heavily on planning done at the local level.

Washington and Regional plans should either be done after Forest plans and be an aggregate of those plans, or Washington and Regional plans should be done first to set the sideboards for Forest plans.

Lack of a Perferred Alternative

A preferred alternative would allow the comments to be focused; it was not possible to make specific, substantive comments on all nine alternatives since there was so much data.

Public should have the benefit of the Forest Service's preliminary recommendations. Forest Service should have published a preferred alternative to give the public an opportunity to suggest constructive changes.

The lack of a preferred alternative indicates that an alternative which represents a conflict with Federal statutes that protect rare and endangered species, such as Alternative 9, might be selected.

The presentation of an alternative program without a preferred alternative represents progress.

Lack of a preferred alternative is misleading and frustrating for meaningful public review.

NEPA Compliance

This topic received light comment from individuals, conservation groups, business groups, and State agencies. Some respondents felt that NEPA compliance was sufficiently addressed; however, most comments indicated that NEPA and National Forest Management Act (NFMA) requirements were not fully met and in some cases violated.

Lack of a genuine range of wilderness alternatives is clearly illegal under NEPA. The emphasis on timber in the alternatives is not in keeping with NEPA which requires multiple-use considerations. Although NEPA required it, research on treatments that may cause resource damage are not included in the DEIS.

If the RPA document and Forest plans are out of sync, that makes both documents legally vulnerable.

Analysis of environmental impacts of the alternatives is extremely superficial. Long-range effects of evenage management on the environment have not been considered.

Adding more alternatives may prevent lawsuits that stem from NEPA deficiencies. Taxpayers must foot the bill in defending poorly prepared, biased Federal recommendations.

SECTION 2: RESPONSE TO COMMENTS

Air, Soil, and Water

Comment 1: Does the 1985 Recommended Program level meet legal requirements, such as those mandated by the Clean Air Act of 1977 for air, soil, and water?

Response: Yes, both levels of the Program meet these requirements, which are in summary:

1) Maintain soil productivity
2) Maintain water quality to meet State standards
3) Maintain favorable water flows
4) Protect air quality

The Program provides technical support through Forest planning, project evaluations, and monitoring to assure that risks to soil, water and air resources are properly identified and mitigated. This work is planned in support of other resources such as timber.

Comment 2: Why are air quality and related visibility concerns not reflected in a national RPA goal?

Response: Each State has goals for managing air quality, and the Clean Air Act of 1977 directs each state to develop a State Implementation Plan (SIP) for monitoring and managing air quality. Federal Agencies and private landowners are to comply with the plan. The Forest service supports the State goals and conforms with the law. The management of air quality relevant to the Forest Service is included in the National Forest System activities. The valuation and monitoring of the effects from off-site pollution sources or proposals affecting quality related values, which includes visibility, are usually accomplished by the Forests. Interagency research and monitoring is being accomplished and as appropriate the SIP will be revised. More air quality management information has been included in this final Environmental Impact Statement.

Comment 3: Why does the water goal emphasize water yield more than water quality? How is water managed for both quantity and quality?

Response: Ensuring adequate waterflow was a major reason for the establishment of National Forests. By increasing water yields, the Forest Service can improve the productivity of the land, help wildlife and assist the economic development of communities. At the same time, the Forest Service will maintain and improve water quality.

Comment 4: Why have you not addressed hydropower potential of rivers and streams on National Forests and alternative effects on existing and potential hydropower development needs?

Response: The responsibility for estimating potential, feasibility, and needs for power is with the Federal Energy Regulatory Commission (FERC). The effects on National Forests depend on design, demand, costs, and other competing uses. The Forest Service's role

is to assess the impacts of proposals through the environmental analysis process and to make recommendations to FERC. The Recommended Program assumes this process will continue at levels similar to the present.

Comment 5: What is the Forest Service position on acid rain, and how do the High and Low Bound Program levels respond to prevent damage from it?

Response: The Forest Service position on all types of acid deposition is to comply with the Clean Air Act of 1977 which directs federal agencies to control pollution emitted from federal property, take action to prevent significant deterioration of air quality, and designate areas according to air quality classification (such as Class I for most wilderness areas and Class II for other areas within the National Forests). In addition, substantial interagency research and monitoring is being accomplished, and more is proposed in the Program to learn about acid deposition effects, discover opportunities for preventing significant deterioration of air quality, and to develop mitigation measures. The Clean Air Act designates as Class I areas each National Park over 6,000 acres and most Federal wilderness areas over 5,000 acres. These are designated for the most stringent protection from future air quality degradation. Class II areas allow short-term air quality degradation based on approved State air quality plans.

Minerals and Energy

Comment: 6 Why does the RPA goal not give higher priority for mineral and energy development? It is too passive and reactive when it should encourage exploration and development.

Response: Mineral development depends on market demand and the initiative of mineral explorers. The Forest Service minerals and energy policy is to coordinate mineral exploration and development with resource management requirements. This coordination is accomplished through the use of the NEPA process at the Forest level.

Comment: 7 Why are you over-emphasizing mineral extraction and economic returns which provide short- term gains but long-term detriment to other resources?

Response: The Mining and Minerals Policy Act of 1970 states that it is the continuing policy of the Federal Government to "foster and encourage" mineral development and the reclamation of mined land so as to lessen any adverse impact upon the physical environment. The Recommended Program provides for the orderly exploration and development of minerals within the constraints required by law.

Protection and Support

Comment: 8 Why did the DEIS not address tribal concerns for protection of treaty rights as well as consideration of religious and cultural values?

Response: The Draft Environmental Impact Statement (DEIS) recognizes tribal concerns and treaty rights on page 3-16. The discussion is expanded in Chapter 3 of this document. The consideration for specific tribal concerns, treaty rights, and religious and cultural values are specifically addressed in Forest land management plans where applicable and in specific project environmental analyses.

Comment: 9 Why are roads built on the National Forests and how are the standards for construction determined?

Response: Major roads on the National Forests are often highways built and maintained by County, Federal, or State governments for the purpose of providing national transportation, and for access to private lands intermingled with the Forest or located outside the boundaries. Other roads within the Forest are developed and maintained for the purpose of administering Forest activities including: livestock grazing, timber harvest, fire protection, recreation, special use management, and wildlife management.

The standards for construction vary depending on the purpose of the road. Some roads are designed for temporary use and will be closed after the use for which they were built is completed. Other roads are designed for continuous use by a large volume of traffic. Many roads are built initially to provide access for a specific project and are then left open to provide access on a continuous basis for other resource management activities.

Comment: 10 How does the Program address community stability?

Response: Community stability is an important aspect of Forest Service management and is addressed in National Forest plans. For example, timber harvest and grazing permits are managed in a way that cause minimal disruption in local economies.

Range

Comment: 11 How does the Program respond to potential for increases in livestock use since livestock compete with wildlife?

Response: The Recommended Program proposes an appropriate mix of uses commensurate with range-land capacity. Capacity will be increased through cost-effective improvements and intensive management practices. Improved forage quality and quantity will also benefit wildlife habitat, improve water quality, and reduce soil erosion. Adjustments will be made where grazing use exceeds available livestock forage.

Comment: 12 Why was a full range of alternatives not shown for range as it was for timber?

Response: The RPA DEIS presented a reasonable range of alternatives for all resource uses and activities, including range. Alternative 2, for example, provided a high level of grazing use which was 93 percent of the Forest plan-based benchmark for grazing capacity.

Recreation

Comment: 13 How is Forest Service policy regarding visual quality standards treated in the RPA Program?

Response: Visual quality objectives are considered in Forest plans. The appropriate coordination with other forest resources and consideration of visual quality objectives is accomplished by incorporating requirements into the environmental analysis and implementing the projects in a manner that will ensure meeting those objectives. Forest planning data is the basic building block for the NFS portion of the RPA Program.

Comment: 14 How was the level of downhill skiing on National Forests determined?

Response: Potential ski area designations and development priorities are considered in the National Forest land management planning process. Recreational demand findings in the RPA Assessment, the Regional Guides, and at the local level are considered along with resource capability and suitability.

Wilderness

Comment: 15 ow were wilderness acreage decisions made for each alternative? Case-by-case and area-by-area analyses must be the basis for allocation decisions. All unique ecosystems must be included.

Response: The least wilderness acreage is in Alternative 5 which includes only those areas designated as part of the National Wilderness Preservation System. Alternative 1 includes areas contained in Alternative 5 plus the Administration's recommendations on areas to be added as of December 1983. Where the Administration's decision was not known the RARE II recommendations were used. The largest wilderness acreage is shown in Alternative 3A which includes the effects of including legislative proposals beyond the RARE II recommendations.

The 1985 RPA does not recommend specific wilderness areas nor constrain the range of alternatives considered in Forest plans. Specific wilderness recommendations will come from the Forest planning process with Congress actually designating wilderness areas. In 1984 Congress passed legislation that designated wilderness in many States and removed many roadless areas from further wilderness consideration during this round of Forest planning, except for areas designated further planning, wilderness study, or areas not released as noted in the legislation.

Comment: 16 Why does the RPA wilderness goal not include a statement about identifying and protecting each unique ecosystem type?

Response: The Wilderness Act of 1964 identifies the general planning standard for wilderness to include recreational, scenic, scientific, educational, conservation, and historic purposes. Uniqueness is one of the many criteria applied in the wilderness analysis and recommendation process. The RPA Program broadly encompasses both planning and management opportunities for wilderness. Wilderness ecosystems are more specifically addressed in Forest plans.

Comment: 17 In the DEIS, why was a full range of alternatives not shown for wilderness as it was for timber?

Response: The RPA DEIS presents a reasonable range of alternatives for all resource uses and activities including wilderness. Wilderness acreage was developed by the regions based on currently designated wilderness with an estimate of future designation from current roadless areas. The range of alternatives is within the scope of legislation considered by Congress.

Alternative 3A, with approximately 52 million acres of wilderness, is included in this document as a result of public comment. The purpose is to evaluate the effects of an alternative with even higher wilderness acreage.

Comment: 18 Why were optional designations, such as back-country or rotating wilderness not considered in conjunction with wilderness?

Response: These kinds of ideas are included within the general opportunity to manage wilderness areas to improve management and information techniques for shifting more recreation uses to underutilized wilderness. The specifics of these management opportunities are addressed in National Forest land management plans.

Timber

Comment: 19 What are the short-term effects of the Federal Timber Contract Payment Modification Act on the present backlog of unharvested timber.

Response: The Federal Timber Contract Payment Modification Act established annual limitations on the Region 6 timber sales program for 1985 through 1991. The purpose of these limitations is to improve the scheduling and harvest of timber sales. Recent timber sales levels indicate that most of the re-offered timber will be sold before 1990.

Comment: 20 Departure decisions should not be made from the top down. Why do all alternatives include departure; shouldn't there be plans for maintaining nondeclining, sustained yield?

Response: Departure volume decisions were made by Regions, based upon forest information, in response to the specific objectives and emphasis of each alternative, resource capability, and the goal of maximizing net public benefits. While all alternatives contain departure volume, the amount in some alternatives is relatively insignificant. In Alternative 3 (High Nonmarket) for example, the primary emphasis is on nonmarket outputs, but it is still cost efficient to include a small amount of departure volume, up to the year 1990.

It is important to remember that the departure volumes shown for each alternative represent estimates of total departures for all National Forests. Forests consider departures in Forest plans as required by the National Forest Management Act. Since actual departure volumes will be determined in Forest plans, the departure volume in the Recommended Program is an estimate subject to adjustment as Forest plans are completed and implemented.

Forest Service policy to achieve long-term nondeclining sustained yield remains in effect.

Comment: 21 How was biological potential for timber growth estimated on sites with higher elevations or poor soils?

Response: Biological growth potential for timber is defined as the average net growth attainable in a fully stocked natural forest stand. Calculations are determined by considering individual site factors such as elevation, soil condition, slope, aspect, temperature, moisture, and growing season, and then estimating the average net growth attainable.

Comment: 22 Why do you continue deficit timber sales by selling timber for less than costs? This practice creates an artificial and unsustainable economy.

Response: Deficit sales are sales where the Forest Service appraisal indicates that an operator of average efficiency may not make a normal level of profit if the sale is operated under current market conditions. An improvement in market conditions could change the picture. The Forest Service competitive sale procedures assure that the public receives market value for the timber. Selling at market value does not create an artificial or unsustainable economy.

Selling timber for less than annual costs, is not necessarily deficit sales, but would be below cost annually. Several recent studies have attempted to compare annual expeditures of selling timber with annual stumpage revenues, and then defined below cost sales as those in which the annual costs are more than the revenues. This approach does not consider the effects of future sales in a systematic planning context. Major capital items, such as roads, should be written off against both present and future sales and induced benefits should be added to total revenues.

The Forest Service believes that when all costs and all benefits are properly considered, very few sales are actually below cost. The U.S. Treasury receives direct cash revenue from the sale of timber, but there are additional benefits derived from commercial timber sales such as improved access to the National Forest for other activities. All these benefits must be considered in evaluating individual timber sales.

Comment: 23 How have the effects of increased utilization of fiber waste and slash been estimated on natural restoration of soil nutrients?

Response: These effects and others are addressed by the Forests through the environmental analysis process which considers effects on soil nutrients in context with other influences such as climate, slope, elevation, other vegetation and timber species, methods of slash removal or treatment, and soil type in making decisions on timber stand management.

Comment: 24 Why is there no detailed dicussion in the DEIS on herbicide use, need, and hazard? There should also be a risk analysis presented.

Response: The RPA alternatives represent broad national programs and do not contain site-specific information which would be necessary to discuss the need for, use of, or hazards of using herbicides. At the Forest planning level, where specifics are known, herbicide use will be analyzed as required by the National Environmental Policy Act.

Wildlife and Fish

Comment: 25 Why do you emphasize a limited number of wildllfe and fish species, mostly game, since this does not assure the necessary habitat diversity for all species?

Response: The common wildlife and fish species are generally those for which we have the best inventory and the most knowledge. They are relatively visible and can be efficiently monitored. Many of them are also species that can be used to indicate the general status of many less-known species.

Threatened, endangered, and sensitive species receive special study and management which benefits other wildlife and fish. Species with special habitat needs, such as migratory song brids, also received special consideration during the Forest land management planning process.

Comment: 26 What measures were taken to assure compliance with the legal requirements of the Threatened and Endangered Species Act?

Response: The Recommended Program levels were developed within the constraints of the T&E Species Act. Compliance with the Act occurs at the Forest level through the NEPA process.

Research

Comment: 27 What is the relationship between the research and management components of the High and Low Bounds of the Program?

Response: A specific effort was made by Station and Regional personnel to identify research needs. Research programs are strongly oriented toward both National Forests and to programs on other lands. The National RPA Program description masks regional and local interactions that were considered in the development of the national Program levels.

International Forestry

Comment: 28 Why is international wildlife management assistance not included along with threatened and endangered species as part of international forestry?

Response: International forestry aspects of the alternatives were discussed only in summary form in the DEIS. Activities related to wildlife management and threatened and endangered species are important and would be a part of any international forestry activities. Most international forestry efforts require involvement and cooperation with other agencies and or organizations. These activities would be coordinated with the U.S. Fish and Wildlife Service which as authority to carry out cooperative programs on the management and conservation of plants and animals of tropical forests.

Comment: 29 Why does the Forest Service deal with international forestry? It should be left to the Agency for International Development and the Food and Agricultural Organization.

Response: The USDA Forest Service is the largest forestry organization in the world and is looked to for leadership and expertise. In addition, the United States, along with many other countries, is becoming more interedependent on international resources--including forest resources. The Nation has a stake in world timber resource developments for the following reasons:

Trade. Total U.S. trade is a major domestic concern. The U.S. is the world's leading importer of timber products. For example, in recent years, lumber imports have increased considerably and now account for about 30 percent of total U.S. lumber consumption. Given a strong forest supply situation, the United States could greatly expand its exports of forest products, in addition to meeting a greater share of domestic needs.

Political and Economic Stability. U.S. interests and investments world-wide often include countries with economies that are heavily dependent on forest resources. Failure of these economics and political systems can cause considerable strain on our economic system from factors such as the inability to these countries to meet payments on U.S. investment or development loans.

Link with Domestic Forestry Needs. Many international forestry needs are directly or indirectly linked with domestic forestry program objectives and concerns. For example, acid deposition has been under intense examination in many areas of Europe for some time. Research information exchange on this concern is in our interest.

Link with other Agencies. Under an interagency agreement, the USDA Forest Service currently provides technical forestry expertise to the Agency for International Development. The United States, as a member of the United Nations Foods and Agricultural Organization (FAO), contributes financially and participates in many committees including the FAO Committee on Forestry (COFO) which advise and help guide the organization. The Chief of the Forest Sevice represents the United States on COFO.

State and Private Forestry

Comment: 30 Was the effect of the S&PF level in increasing timber production on nonindustrial private lands evaluated jointly with timber production on National Forest lands?

Response: Yes, we considered the relationships between NFS and the private sector to develop the NFS and S&PF components of the High and Low Bound levels of the Program. For example, an overall test of the Program is its effect on long-term prices. Another consideration was the relative efficiency of various activities.

Comment: 31 What is the role of the Forest Service with respect to the management of nonindustrial private forest lands?

Response: The S&PF program levels, reflect the historic Forest Service activities of providing technical and financial assistance to nonindustrial private landowners, but at different levels in response to the resource emphasis of each alternative.

S&PF activities respond to: (1) recent cost-effectiveness studies such as the analysis of the 1979 Forestry Incentives Program and the Cooperative Fire Management analysis; (2) current legislative proposals such as those to use forestry to assist in the redemption of FmHA loans, to convert marginal cropland to forestry uses, and to use forestry to improve the conservation practices on eroding soils; and (3) recommendations of the National Forum on Nonindustrial Private Forest Lands held in St. Louis, Missouri in November 1983.

Legal Requirements

Comment: 32 Why was a preferred alternative not shown in the DEIS when it is required by NEPA?

Response: The National Enviromental Policy Act (NEPA) requires an agency to identify a preferred alternative if one exists. At the time the DEIS was completed, no preferred alternative had been identified. The nine alternatives displayed in the DEIS responded to the RPA goals, but with differing emphasis or timing. Further analysis based on public and other comments was used to develop the Recommended Program.

Comment: 33 How have you handled mitigation in the Environmental Impact Statement (EIS), for range, timber, and minerals? Why are possibilities for mitigation not discussed in more detail?

Response: Mitigation needs associated with range, timber, and minerals development are determined and implemented at the Forest level. The EIS discusses mitigation in broad terms; basically stating that mitigation needs would be greater in alternatives with more resource development. Specific mitigation requirements are addressed at the Forest level.

Comment: 34 Why is the environmental consequences section, Chapter 4 of the EIS, not more specific in describing effects?

Response: The EIS describes the effects of each alternative in broad national and regional terms. More specific environmental analysis is completed on a project-by-project basis at the time a particular project is being considered for completion. The analysis displayed in the EIS is designed to demonstrate compliance with all required laws and regulations, give an indication of the degree of change that is anticipated over time in the environment, and show how much mitigation would be required if a particular alternative were selected.

Comment: 35 Why were outputs determined by Washington Office direction rather than by the capability of the land to produce? Use should have been made of data from the field level.

Response: Outputs for RPA were determined by considering: (1) demands projected in the 1979 RPA Assessment and 1984 Supplement; (2) supply estimates from each Region based on available land managment planning information; and (3) current field inventory information. The output estimates are based on the best capability information available. Distribution of final outputs from the national to Regional levels is based on supply capability information provided by the Regions.

Comment: 36 How are the Assessment, Issues, Goals, and Alternatives linked to each other? It is not clear in the DEIS.

Response: The 1985 RPA Program is goal driven. It responds to long-term national goals that were formulated from opportunities in the Assessment and public review and comment, for each of nine opportunity areas. These goals describe the Forest Service role in the long-term managment of the Nation's renewable resources.

In developing the 1985 RPA Program, the Forest Service also addressed significant national issues that may have near-term impacts on reaching long-term goals. A scoping process required by CEQ regulations was used to identify significant national issues. The source of the issues included the 1980 RPA Program and the 1979 Assessment; policy guidebooks, reports, and workshop proceedings of several national

organizations and associations; recommendations submitted by Forest Service managers at field and national levels; and public comment from Regional and Forest planning processes. The alternatives represent different mixes of resource emphasis. Consequently, progress toward achievement of specific national goals varies by alternative.

Comment: 37 Does the Program explain the relationship between Forest Service programs and other USDA agency programs?

Response: The 1979 RPA Assessment contains a detailed description of Forest Service programs and responsibilities in research, cooperative programs and management of the National Forest System, and the relationships of these programs and responsibilities to public and private activities. This is required in Section 3 (3) of the RPA Act.

The 1985 RPA Program DEIS, in the interest of brevity, did not repeat this material. The DEIS was specifically directed at presenting alternatives for Forest Service activities including National Forest System, State and Private Forestry, and Research. It contains only references to cooperation with other Federal, State, and local governments as needed to describe the Program.

Comment: 38 Did you revise many of the National Goal statements for the FEIS?

Response: The national RPA Goals were developed with public involvement in early 1982 and included the needs (demand and supply outlook; social, economic, and environmental effects; and resource base) and opportunities for each resource use and activity. Revision of the Goal statements was considered before the final EIS and Program were prepared, but no revision was made. This document provides a discussion of the context surrounding all goals. For example, it clarifies that economic criteria are part of every goal even though the goal may not explicitly contain wording referencing economics.

Comment: 39 How were the objectives of the Multiple Use-Sustained Yield Act assured as alternatives were developed?

Response: Alternatives were developed utilizing Regional and Forest data. The forest data was generated as a result of forest planning activities. These activities at the field level take into account the multiple-use aspects of resource managment. Sustained yield is assured through the implementation of national and regional management requirements. These requirements have been developed to protect the long-term productivity of that resource.

Comment: 40 What was the source and reliability of the data base on which the nine RPA alternatives were generated?

Response: The 1985 data base was derived from the following: land management planning data, Statewide Forest resources plans, 1980 RPA Program information, and the best professional judgment from all levels. The data base was adjusted as additional land management plans and Statewide Forest resources plans were completed. The data used for RPA analysis is therefore the best and most recent available.

Comment: 41 Will Forest plans need to be changed if they do not meet RPA Program targets or match an annual budget?

Response: Generally, Forest plans will not have to be modified due to a revision of the RPA Program levels or annual budget. The annual budget is more likely to affect the schedule of implementing a Forest plan. If budgets differ over several years from those contemplated in the plan, then an amendment to the plan may be necessary. If the plan is funded at a low level over time, certain activities might have to be postponed, changed, or eliminated. On the other hand, higher levels of funding could mean accelerating certain activities. As a consequence, outputs and costs probably would be different on a year-to-year basis compared to the long-term plan. Most Forest plans contain sufficient flexibility to meet long-term RPA resource targets, and if necessary, adjustments can be made during the next round of forest planning. Similarly, specific changes in Forest-by Forest capability can be included in susequent RPA Program analyses.

Thus, the provisions in the law for periodic revisions of Forest plans and the RPA Program provide a mechanism to account for changes in funding, production capability, and resource needs without the need for continued interim alterations. Future RPA Programs will utilize more precise Forest resource data and analyses to bring closer correlation between Forest plans, RPA Programs, and annual budgets. Since Forest plans will be completed by the 1990 RPA Assessment and Program deadline, a stronger tie and easier traceability is expected between RPA and Forest Plans.

Comment: 42 How does RPA relate to the annual budget process?

Response: The Resources Planning Act addresses the annual budget process in two ways. First, it calls upon the President to transmit to Congress, with the Assessment and Recommended Program, a Statement of Policy which expresses the Administration's intentions for framing Forest Service budget requests for the years ahead. Second, when the President's budget is transmitted to Congress each year, it is accompanied by an explanation describing the relationship between budget requests and the Program. The Act also calls for an annual evaluation report on Forest Service programs which evaluates progress in implementing the RPA Program.

Economics

Comment: 43 What was the basis of the values for nonmarket resources used in the PNV analysis? Why was indexing only used for timber?

Response: Travel costs was the basic methodology used for valuing nonmarket resources. This method is widely accepted as state of the art procedure. It is, for example, the procedure that was recommended and used by the Water Resources Council. Values determined through this procedure were used to approximate market clearing prices. Thus, these values were equivalent to those for commodity resources, such as timber, where market prices are determined. As a result of public comment, these values were reexamined, and some changes were made, before analysis for the final Program was completed. A more detailed discussion of the procedures used can be found in Appendix F.

In the DEIS, values for all resurces except timber were held constant over time. Timber supply-demand analysis provided in the Timber Assessment Market Model enabled us to estimate price changes over time. In developing the Recommended Program, to provide for changes over time in the supply-demand situation for all resources, values for other resources were also indexed. For details on the indexing process and its results, see Apppendix F.

Comment: 44 In its economic modeling, why does RPA ignore tax revenues to Federal, State, and local coffers and only emphasize payments of the Treasurv?

Response: Tax payments made by individuals or firms are difficult to attribute directly to activities which take place on National Forest System lands. In our economic modeling, we do take into account the regional employment and income changes that take place as a measure of economic factors beyond PNV and returns to State and Federal Treasuries. For more detail on the employment and income modeling, see IMPLAN in Appendix E.

Comment: 45 Why was the economic analysis prepared as it was? How were the basic assumptions established?

Response: The RPA Program uses a benefit/cost analysis based on present net value. This approach was chosen due to its wide acceptance as a measure of economic efficiency. Supply and demand projections in the RPA Assessment are based on assumptions taken from such sources as the Bureau of Economic Anaysis' estimates of employment, income and gross national product levels.

Comment: 46 Why are the costs and benefits of alternatives not addressed in more detail in the EIS?

Response: Each alternative's costs and benfits are examined through present net value (PNV) analysis, which calculates total costs and total benefits and discounts them over fifty years. Due to the complexity of this process, only the total costs and benefits of each alternative are displayed--nationally in chapter 2 and appendix L, and regionally in appendices H and K. The Returns to Treasury from major resource areas are also displayed in these appendices.

M-41

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* Honorary

Dr. Thomas E. Hamilton
Director
Resources Program and Assessment
USDA Forest Service
P.O. Box 2417
Washington, D.C. 20013

Dear Dr. Hamilton:

This letter and its enclosure constitute the comments of the American Mining Congress on the Draft Environmental Impact Statement for 1985 Resources Planning Act Program.

The American Mining Congress is an industry association that encompasses (1) producers of most of America's metals, coal, and industrial and agricultural minerals; (2) manufacturers of mining and mineral processing machinery, equipment, and supplies; and (3) engineering and consulting firms and financial institutions that serve the mining industry.

Although minerals and energy are essentially considered under the same rubric, we are commenting primarily on the hard mineral aspects of the program and those resources that impact the role of hard minerals.

In each five-year update of the RPA program, a greater recognition of mineral resources in the National Forests has been shown. This is commendable. However, the quality of the physical mineral data and the economic aspects need additional emphasis and refinement. We trust that the 1990 assessment and program will reflect these considerations.

We appreciate the opportunity to comment on the RPA document.

Sincerely,

J. Allen Overton, Jr.
President

Enclosure

American Petroleum Institute
1220 L Street, Northwest
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C. T. Sawyer
Vice President

April 9, 1984

Dr. Thomas E. Hamilton
Director
Resources Program and Assessment
USDA Forest Service
P. O. Box 2417
Washington, DC 20013

Re: Draft Environmental Impact Statement; 1985-2030 Resources Planning Act Program

Dear Dr. Hamilton:

The American Petroleum Institute is pleased to comment on the Forest Service's third Resources Planning Act (RPA) Program update. API is a national trade association representing 235 companies of all sizes and 6000 individuals engaged in all phases of the petroleum industry. API, along with many of its members, has participated actively in the Forest Service's planning activities. We are most concerned that balanced management of Forest System lands include adequate consideration of the subsurface mineral values of those lands.

By and large, our experience to date is that oil and gas resources receive less than adequate attention from the Forest Service. The Draft Environmental Impact Statement (DEIS) does little to change our views.

The DEIS reinforces our opinion that subsurface mineral values are being managed as secondary to surface resources. The result, unfortunately, is that exploration for and development of mineral resources on Forest System lands occurs only when such activities can occur with virtually no effect on surface values. We believe that petroleum and other mineral values have independent significance and, as a result, should be considered equally with surface values such as timber, recreation, wilderness and other multiple uses.

Until the Forest Service recognizes and corrects the fundamental inequality between surface and subsurface resource values, we doubt that planning efforts, such as the Resources Planning Act update, can ever lead to truly balanced

An equal opportunity employer

decisionmaking. The nation's continuing dependence on foreign sources for 31 percent of its petroleum suggests that increased, not decreased, efforts must be made to locate and produce domestic petroleum resources, especially from government lands. During the next decade the nation must find 8.5 million barrels of petroleum each day just to maintain domestic reserves even if only current rates of consumption are experienced. We expect that much of that future supply will come from the largely unexplored federal lands in the western United States. Clearly, management of the nation's mineral resources must not be considered as secondary to other uses of the federal lands.

The comments below address several major concerns we have with the DEIS. They are generic in nature and when taken together indicate that the DEIS is seriously flawed and, as a result, an inadequate decisionmaking tool.

Minerals and Energy Opportunities

The DEIS correctly identifies the need to "provide for mineral prospecting and exploration, and respond to proposals for minerals development, in concert with other resource uses and values, and provide technology for reclamation of disturbed lands." Opportunities for achieving this goal are also laid out with the most important being "Improving access to lands for efficient exploration and evaluation of the mineral resources."

We agree that the goal itself and the first and second opportunities are important. But they are significant only if they are implemented through the land planning process and even then only if the goal is expanded and clearly identified.

We believe the RPA DEIS energy and mineral goal found at page 1-16 should be completely recast to emphasize full and complete evaluation of the mineral resource potential of lands within the National Forest System. The current goal should be the major method by which this evaluation is achieved. The opportunities then become additional methods of achieving the goal.

The DEIS Fails to Treat Surface and Subsurface Values Equally

For the most part, subsurface resources are subordinated to surface values. As we mentioned earlier, the importance of petroleum and other minerals to national security and general economic well-being, strongly suggests that a higher value be placed on these resources vis-a-vis surface resources.

Moreover, subsurface resources generally are viewed in light of the surface disturbance required to locate and extract mineral resources. In the case of oil and gas activities, we suggest that such treatment is unwarranted. During the exploration phase little or no surface disturbance occurs relative to the amount of surface area that must be explored. Even as the exploration process proceeds only small areas are disturbed, about four acres for an average exploration well, and those areas are carefully protected and quickly and substantially reclaimed. We believe that petroleum exploration and production activities can be, and are, compatible with other multiple uses occurring on Forest System lands.

The DEIS Fails to Provide Necessary Management Guidance

The DEIS does not set forth a preferred alternative. We believe that selection of a preference at the DEIS stage is absolutely essential to the process of formulating resource management goals for the National Forest System. By failing to select a preferred alternative the Forest Service cannot possibly establish the management guidance necessary to drive the planning process at the forest or regional level. The selection of a preferred alternative is the major reason for the current planning process.

API welcomes the Forest Service's effort to describe its resource management alternatives. The Service, however, has paid neither adequate nor entirely fair attention to the subsurface values of Forest System lands. Moreover, the DEIS fails to provide clear management direction through the selection of a preferred management alternative.

We urge the Forest Service to revise the DEIS to treat subsurface values on an equal footing with surface values. We also recommend that the document be revised and republished for comment with selection of a preferred alternative.

Sincerely,

C Dawson

AtlanticRichfieldCompany 555 Seventeenth Street
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Telephone 303 293 7577

J. R. Mitchell
Manager
Public Lands Coordination
Government Relations

April 3, 1984

Mr. Thomas E. Hamilton, Director
Resources Program and Assessment
USDA Forest Service
P. O. Box 2417
Washington, D.C. 20013

Re: 1985 Resources Planning Act Program

Dear Mr. Hamilton:

Atlantic Richfield Company appreciates the opportunity to comment on the Draft Environmental Impact Statement (DEIS) for the 1985 Resources Planning Act (RPA) Program. We cannot support any of the nine alternatives considered in the DEIS because we believe the methodology used for considering energy and minerals is severely lacking. Therefore, our comments will focus on how we feel the Forest Service can incorporate adequate consideration of subsurface values into program analysis.

We are pleased to see that the Forest Service has recognized under the Energy and Minerals Goal, Opportunity No. 1 (p. 1-16), that one of the major concerns with development of energy and mineral resources on federal lands is access. In addition to streamlining leasing and permitting procedures, providing access to land is one of the Forest Service's major responsibilities in planning for future subsurface uses on the forest lands. The RPA Goals for 1985 regarding increasing access do not indicate by what means this opportunity will be accomplished. We believe that this goal can be implemented by focusing on the requirements of planning as addressed in the National Forest Management Act NFMA.

In order to comply with the NFMA requirements and to achieve the goals and objectives of multiple use management, the Forest Service should:

1. Provide for mineral resource development on Forest Service lands.

2. Identify lands having energy and mineral potential and take action to open or maintain access to those resources, while meeting minimum legal standards for environmental protection.

3. Identify where conflicting resource values outweigh potential mineral resource values and what minimum standards for protection must be applied to meet the plan objectives.

Through analysis of resource values, the priorities for management can be determined for each prescription area. We believe that in most cases standard lease stipulations are sufficient protection measures. Past experience has illustrated that the Forest Service may over stipulate areas without regard for the specific resource values involved. For instance, an entire lease may be stipulated requiring seasonal limitations for occupancy when only a small portion of a lease contains a relevant wildlife habitat. Therefore, we believe that the Forest Service should endeavor to apply standard stipulations as a rule, with specific protection measures applied on a case-by-case basis. In addition, we believe it is essential for the Forest Service to show where surface resource values outweigh the subsurface values.

Each of the management alternatives selected should identify the tradeoffs related to energy and mineral development. This examination should include: opportunities and restrictions for access to minerals, minimum protection stipulations required under each alternative, and the relative values placed on surface and subsurface resources.

When the preferred plan alternative is ultimately selected and published, each prescription for management should describe the specific impact on energy and mineral resource development. This should include: the minimum standard requirements for surface protection upon issuance of leases, permits and plans of operation; and what additional requirements, if any, are to be placed on these

activities in order to meet the objective of the prescription. Also, the prescription should give rationale when normal standards are demmed insufficient to protect the land use objective.

We are aware that the Forest Service is currently working with the Rocky Mountain Oil and Gas Association on a review process which displaying constraints and geologic potential in matrix form (copy attached). We suggest that forest planners use this matrix format to assess more accurately the effects of their decisions on the possible development of energy and mineral resources. We believe that this information should be incorporated into all final Forest Plans and Environmental Impact Statements.

We have experienced problems on forest lands when the Forest Service placed blanket restrictions on leases without considering their relevancy for the specific area involved. We believe that the individual forests should be directed to study the actual surface resources prior to stipulating specific lease restrictions for them.

Chapter 2, Program Alternatives and Their Comparison, presents an unbalanced view of surface and subsurface land uses. No mention is made of the adverse impacts on access for energy and minerals exploration and development of various nonmarket land uses. Yet, there is frequent mention of how energy and/or mineral activities would harm surface resource values. The Forest Service should give both of these concerns equal consideration. A balance between subsurface and surface resource uses must be an integral part of the planning process.

The same is true in the section on Environmental Consequences where the Forest Service evaluates by alternative the impacts each would have on social, biological and physical effects. There is relatively no discussion regarding the effects these alternatives would have on opportunities for energy and minerals development. There is much reference to

the adverse impacts that surface use activities would have on wildlife, indicating that these activities can reduce required cover, create excessive human disturbance from roads and mining and reduce essential wildlife forage by increasing livestock use. Conversely, we find no reference as to the impact wildlife programs would have on access for commodity oriented uses.

In addition, we have specific problems with Figure 2.16, page 2-69, where the Forest Service presents a comparison of energy minerals produced by alternatives. Measuring energy and minerals produced by the number of leases issued is invalid because there are varying restrictions placed on leases (such as no surface occupancy or limited occupancy) which are not considered when such a comparison is made. Therefore, a true picture as to how energy and mineral resources are affected by each alternative is not really shown. The comparison should be made with regard to the level of access allowed and the exploration opportunities afforded industry. The ability to produce should not be the focal point in planning procedures but the opportunity to explore should be given extensive consideration.

We encourage the Forest Service to take our comments into consideration when finalizing the RPA document. The Forest Service needs to recognize the importance of energy and mineral in their land management decisions and prescriptions. We believe that several changes are imperative in order to accomplish the goals set forth in the Resources Planning Act Program. Should you wish to discuss our comments further, please don't hesitate to contact us.

Sincerely,

Jay R. Mitchell

J. R. Mitchell
Attachment

conoco

E. Fred Birdsall
Public Lands Coordinator

Conoco Inc.
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(303) 291-6123

January 19, 1984

Mr. Thos. E. Hamilton
Director, RPA
USDA Forest Service
P.O. Box 2417
Washington, D.C. 20013

Dear Mr. Hamilton:

In review of the 1985 RPA we are pleased to see the continuing emergence of energy and minerals among the recognized forest outputs.

The 1985 RPA continues, however, to suffer a fault of previous RPA's in its essentially passive response to minerals exploration and development. Its active provision for minerals is in two categories:

1. Processing of mineral operating plans and lease applications.

2. Technologic assistance in reclamation of disturbed lands.

A third minerals goal, "Improving access for efficient exploration and evaluation . . . " is stated (pg. 1-16) as an opportunity but lacks any action-oriented program. This letter is to invite proactive program attention to the third goal and to suggest one way in which this might be done. (Although my reference frame is oil and gas, the suggested process is applicable to other minerals.)

The likelihood of petroleum exploration on federal forest lands is a product of two factors: (1) the geologic potential and (2) access restrictions, either statutory or discretionary, which inhibit or prohibit occupancy. The discretionary access restrictions are largely a product of the Forest LRMP and ostensibly protect other forest resources. Sequentially, then, the other forest resources are inventoried, the effects of petroleum exploration on those resources evaluated, and stipulations prescribed when deemed necessary to protect those other resources. This sequence effectively subordinates subsurface development to surface protection, avoiding the possibility that subsurface harvest may, in fact, be the highest and best use of certain forest lands for the nation and its public. We believe the RPA regulations (36 CFR 219.1), which require consideration of minerals in land plans, do not intend this subordination.

If the likelihood of exploration is a function of both geologic favorability and access restrictions, it follows that the development of access restrictions, done in concert with an inventory of geologic favorability, should guide the LRMP. Further, since the LRMP is guided also by the RPA, it is appropriate that the RPA itself similarly address minerals development in terms of the dual influence of geology and access.

The RPA seeks to address commodity outputs in terms of dollars, board-feet, barrels, etc. On a global basis we believe you can, given indices on the likelihood of development, make certain assumptions which could result in conclusions of estimated oil and gas reserves. Those assumptions will, however, be rooted in probability distributions which, although reliable for aggregates (viz. Region or nation), are unreliable for small "populations" (viz. individual forests). In short, while the RPA may make reserve estimates, the individual LRMP's could not; their petroleum estimates (targets) must remain in the realm of "exploration likelihood" as controlled by geology and access. We believe that geologic favorability and access restrictions are relatively quantifiable so that the term "exploration likelihood" can itself be relatively quantified. (As an illustration of this quantification process, see the attached paper, "Consideration of Energy and Mineral Resources in the BLM and Forest Service Planning Processes.")

The proactive approach we now suggest becomes RPA endorsement of a process in LRMP development which considers both geologic potential and access restriction so that the **effect** of access restriction will not **unduly** inhibit oil and gas development. The determination of **unduly** becomes the objective of conflict analysis and resolution involving the relative worth of the resources involved.

Minerals management on Forests is enigmatic. Excepting on acquired lands, the Forest Service does not have direct control over minerals, yet the indirect control (via access restrictions) is tantamount to direct. By endorsing the concept of inventorying geologic potential and utilizing it as described, the RPA would provide meaningful supervisory guidance to plan development and administration.

The "win/win" ingredients of the proactive approach are summed:

1. LRMP access issues are focused on geologically favorable areas. (Nonfavorable areas are irrelevant.)

2. A relative "worth" is attached to subsurface resources to assist resolution of conflicts with surface resources.

3. Subsurface resources are elevated in prominence to a par level with surface resources.

4. LRMP authors receive meaningful RPA guidance on the troublesome issue of minerals.

5. Regional and national commodity forecasts have some basis to not only estimate reserves but also to show the effect of land management practices on encouraging or discouraging the development of those reserves. Congress and the public are served.

Thank you for your attention to these remarks. The concept of utilizing a quantified "geologic potential vs. access restriction" to achieve an exploration likelihood (or exploration opportunity) index number is a product of the Rocky Mountain Oil and Gas Association. As Chairman of RMOGA's Subcommittee on USFS/BLM Land Planning, I would be pleased to offer both my and RMOGA's attention to further explanation of any aspect of this concept.

Yours very truly,

E. Fred Birdsall

E. Fred Birdsall

bp

Enclosure

NAM
National Association
of Manufacturers

Resources and Technology Department
Energy
Environmental Affairs
Natural Resources
Innovation, Technology & Science Policy

April 12, 1984

Dr. Thomas E. Hamilton
Director, RPA
USDA, Forest Service
P.O. Box 2417
Washington, D.C. 20013

Dear Dr. Hamilton:

The National Association of Manufacturers is a voluntary business association of over 13,000 corporations, large and small, located in every state. Members range in size from the very large to over 9,000 smaller manufacturing firms, each with an employee base of less than 500. NAM member companies employ 85 percent of all workers in manufacturing and produce over 80 percent of the nation's manufactured goods. NAM is affiliated with an additional 158,000 businesses through its Associations Council and the National Industrial Council.
As such, the Association has a keen interest in insuring adequate supplies, at reasonable costs, of domestic natural resources that serve to fuel America's industrial base.

NAM commends the U.S. Forest Service for adopting a goal oriented approach in the 1985 Resources Planning Act (RPA) program. The NAM, as in previous years, would like to limit its comments on the Draft Environmental Impact Statement to the National Goals that address timber, energy and minerals, and Wilderness as Opportunity Areas in the RPA Program.

TIMBER/ENERGY/MINERALS

The NAM urges the Administration and Congress to adopt policies, relative to the Resources Planning Act process, which will achieve efficient and continuing levels of timber, energy and minerals production. The past several years have taught us once again that natural resources are indeed a major contributor to our nation's economic well-being. This is especially true in those areas of the country where the impact of the adjacent National Forests is particularly important to the local economies, especially in terms of jobs.

But besides the obvious domestic economic and employment impacts, it has also been proven that access to the natural resources contained in all of our public lands has serious national security implications. Our dependence upon imports for less than reliable sources for strategic and critical minerals is well documented. So is the fact that, for all our abundant resources, the U.S. is still a net importer of lumber.

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With proper goal selection, and the pursuit of the proper alternatives, we could remedy our timber/mineral dependence. It is the pursuit of the multiple use concept on our National Forests that will be a key ingredient of the success of the program. The term "multiple use" embodies the true spirit of the term "conservation," meaning the pursuit of goals that achieve the highest and best use of resources for the public good.

WILDERNESS

The 191 million acre National Forest System is a key component of the 760 million acre public land base from which we derive a major portion of our domestic resources. NAM is concerned however, with the diminishing land base available for multiple use due to land withdrawals, especially withdrawals of a restrictive, preservation-oriented nature such as Wilderness. Legislative proposals presently under consideration in the 98th Congress seek to add 10 million new acres of Wilderness to the National Wilderness Preservation System in the lower 48 states, most of it in the National Forests. We are concerned that the successful passage of these new Wilderness measures could affect softwood timber supplies and the supplies of energy and nonfuel minerals in the coming years. For example, the largest portion of the softwood timber inventory, some 41 percent of all softwood growing stock and 51 percent of the sawtimber, is in National Forests. But the National Forests in the three Pacific Coast States alone contain 54 percent of the National Forest softwood sawtimber inventory and 27 percent of the Nation's softwood sawtimber supply. There exist three legislative Wilderness proposals in the 98th Congress for the three Pacific Coast States that seek to designate 4.5 million additional acres of National Forests as Wilderness. NAM is concerned that successful passage of these measures could skew many of the projections for increased resource production in response to rising demands detailed in the RPA document under all Alternatives. In light of this, in cases where national needs for mineral, timber and energy exceeds the need for Wilderness recreational, biological and historical values, the NAM believes that some areas should be returned to multiple use management from the Wilderness category in order to allow environmentaly sound extraction of surface and subsurface resources vital to America's industrial base.

Thank you for this opportunity to comment. NAM looks forward to working with you during the next phase of the 1985 RPA Program.

Sincerely,

Kevin Ott
Director, Natural Resources

KO/vgk

NATIONAL CATTLEMEN'S ASSOCIATION
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30 March 1984

Thomas E. Hamilton, Director
Resources Progam and Assessment
U.S.D.A. Forest Service
P. O. Box 2417
Washington, D. .C 20013

Dear Mr. Hamilton:

The National Cattlemen's Association, after a careful review, is pleased to provide you with the benefit of their comments to the Forest Service's draft Environmental Impact Statement on the 1985 RPA Program.

Should you have any further questions, please do not hesitate to contact us at your earliest convenience.

Sincerely,

D. B. Polk
Chairman
NCA/RPA Task Force

cc: NCA/RPA Task Force
John Weber
Jo Ann Smith
Don Butler
John Meetz
Don Nelson
Ron Michieli
Max Peterson
Bob Williamson

sdb
Enclosure

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NCA

NATIONAL CATTLEMEN'S ASSOCIATION'S
COMMENTS AND RECOMMENDATION
ON 1985 RPA DRAFT EIS AND PROGRAM

General Comments

1. The draft report should be corrected to ensure that the final 1985 RPA Program addresses the protection, management, and development of only National Forest System (NFS) lands, cooperative Forest Service programs, and research. Throughout the draft report, alternative Forest Service actions are discussed for private and other nonfederal lands, as well as NFS lands.

It is the National Cattlemen's Association's belief that Congress, in passing the RPA legislation, never intended for the Forest Service to be master planner for all forest and rangelands of the United States. Since 1975, your persistent intrusion into the private and nonfederal sector of land use and land management by way of the RPA process has diluted the effectiveness of RPA and the efficiency and effectiveness of Forest Service management protection, and development of our national forests.

The U. S. Forest Service has built an admirable reputation of being a results-oriented agency through its long history of national forest management and forestry research. This reputation has not been earned by telling or suggesting to private landowners how they should or will manage their properties. Private land use and management decisions should continue to be left to private landowners.

Continued Forest Service planning efforts for the total forest and rangeland resource base of the United States constrains available Forest Service personnel and resources, which should be directed toward the management of the National Forest System.

The remedy for Forest Service failure to develop an RPA program as mandated by Congress is quite simple—devote your resources to those lands you are authorized to protect, develop, and manage; cease and desist from developing a federal program for private and other nonfederal lands.

2. The National Cattlemen's Association does not favor any of the alternative national programs contained in the draft report. We believe that all nine (9) alternatives discriminate against the cattle industry on National Forest Service lands, and place a disproportionate share of emphasis upon resource uses other than forage for livestock. Our opinion is not based upon a simple call for equity. Rather, we do not believe the alternatives developed follow well-established ecological and economic principles. Accordingly, all of the national program alternatives fail to provide a balanced approach in meeting social, environmental, and economic needs of National Forest System land users. Any program recommended from the alternatives presented would fall short in meeting present and future resource needs of our national forests and the products and values they contribute to the national economy and the national interest.

3. We find the reference to Forest Service "involvement in local and state land use planning" and the reference to "expanding wetland nesting habitats through fee purchase of key tracts and easements in the United States and Canada" to be indicative of a perceived role by a federal agency in individual property right decisions. Several other examples of such an encroachment into nonfederal land use and management occur throughout the draft report, especially in Chapter 1.

4. NCA finds no mention of the role of locally elected and governed Soil and Water Conservation Districts in regard to state- and privately owned forest lands. It should be stressed that these local governments develop and implement annual and long-range programs and plans for soil, water, and related resource conservation on nonfederal lands. Furthermore, they coordinate and arrange for and provide technical assistance to nonfederal landowners in developing, protecting, and managing their lands on a voluntary basis at the landowner's request.

5. The failure of the draft EIS to discuss range productivity of National Forest System lands and the inconsistency and incompleteness of fish and wildlife discussions raise serious questions and cast doubt on the value of the environmental impact portion of the draft report. These shortcomings are major and should be corrected in the final report in order to address adequately the range portion of National Forest System lands.

6. NCA's review of the 1985 draft report revealed once again the questionable and inconsistent use of economic evaluation procedures by the Forest Service. For example, "economic efficiency" is used in three program alternatives (numbers 2, 3, and 7); "economic viability" is used in alternative number 9; and economics is not mentioned at all in five alternatives (numbers 1, 4, 5, 6, and 8). We are particularly distressed over the erroneous economic procedures employed in evaluating NFS rangelands, which ignore induced costs and benefits.

Recommendation - Range Grazing on NFS Lands

Consistent with the 1975 and 1979 RPA assessments, and in concert with the finding of the Public Rangelands Improvement Act of 1978 that National Forest System lands are producing less forage than their potential, National Cattlemen's Association recommends that the National Forest System lands be developed, protected, and managed to produce 23 million animal unit months of grazing by the year 2030. This amount of grazing is in harmony with the 1975 RPA assessment projection of 23 million AUMs under the least-cost option presented on page 205 of that assessment.

We believe such an increase is biologically reachable, eocnomically sound, environmentally safe, and equally beneficial to other competing and complimentary uses and public demands.

These increases in forage production can be achieved through the practice of established range management principles which provide for: (1) improvement in range ecological condition and forage production through the application of planned grazing management systems; (2) restoration of depleted ranges by seeding of range grasses and legumes; (3) reduction in the densities of invading brush and weeds by integrated brush and weed management systems; (4) development of water distribution and storage facilities to enhance water conservation and water utilization; and (5) implementation of various soil and water conservation practices which improve water quality and ecosystem health through the reduction of soil erosion.

This increase can be further augmented and more effectively achieved by increased private capital investments on National Forest System lands, which range forage users are willing to make in return for less governmental impediments, and being given more management flexibility.

Your consideration of these recommendations will enable the nation's beef cattle industry to continue to provide the consuming public a stable and consistent supply of high-quality red meat.

#

National Forest
Products Association

Forest Industries Building • 1619 Massachusetts Avenue, N.W.
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Gene S. Bergoffen
Assistant Vice President
Resource Programs
202/797-5871

April 9, 1984

Mr. R. Max Peterson
USDA - Forest Service
P.O. Box 2417
Washington, D.C. 20013

Dear Mr. Peterson:

The forest industry appreciates this opportunity to present the enclosed statement on the Draft Environmental Impact Statement on the 1985 RPA Program.

The forest industry believes that the RPA Program has three basic purposes. The Program should (1) be based on and provide direction to the Forest Planning effort, (2) be useful in preparing the Forest Service annual budget requests, and (3) be a forum for addressing and examining resource management issues of national interest. The forest industry finds that the 1985 Program DEIS in its present form does not adequately provide the basis to serve any of these purposes.

Alternative for National Forest System

The economic analysis of the nine alternative programs in the DEIS has several serious technical flaws. Nonetheless, the forest industry has developed a preliminary target for national forest ownership which is best represented by the national forest outputs in Forest Service RPA Alternative 2. This preliminary target represents industry's "best guess" as to what the most economically efficient management of the national forests would be if the analysis been done correctly.

Alternative for State and Private Forestry

The preliminary target for nonindustrial private ownership is based upon the joint Forest Service/forest industry study of economic opportunities for increased timber production. This preliminary target, as outlined in our detailed comments calls for an increase of 75 percent in timber production for this ownership. This preliminary target recognizes the need for effective programs to ensure increases in timber productivity from nonindustrial private forest lands.

Alternative for Research

The forest industry does not recommend or endorse any of the proposed RPA Research Program alternatives. We recommend that the final Program for Research address the high priority areas of forest inventory, growth and yield, intensive silviculture, integrated pest management and timber harvesting and wood utilization.

RPA Process

The forest industry is committed to the concept of Forest Service planning. We are, however, seriously concerned that the RPA and NFMA planning processes, as currently designed and managed, cannot be implemented. Although portions of the planning process, mainly some National Forest Plans, have improved to where they are now useful, the Forest Service appears to be a very long way from having a meaningful comprehensive planning system.

The Forest Service staff is to be commended for the cooperative way in which they have helped us review the 1985 Program DEIS. We plan to continue to work with you as you react to these comments.

Sincerely,

Gene S. Bergoffen

WJL/clb

M-50

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Thomas E. Hamilton, Director
Resources Program and Assessment
U.S.D.A. Forest Service
P. O. Box 2417
Washington, D. C. 20013

Dear Mr. Hamilton:

The National Public Lands Council, a federation of livestock organizations in 13 western public lands states and spokesman for the nation's permit holders who utilize forage for beef cattle and sheep production, are pleased to offer its comments in response to the Draft Environmental Impact Statement for the 1985 Resources Planning Act Program.

The basic and underlying rationale for our comments is the joint industry response to the "Alternative Goals 1985 Resources Planning Act Program," published by the Forest Service in December 1981 (attached).

That industry response reviewed the economic rationales of the alternative goals presented, and set forth the livestock industry's own recommended goal for food and fiber production in the future. The industry response also provided legal review of the RPA process and program, and called attention to the following defects in the Forest Service document: (1) the speculative nature of the future demand projections, (2) the failure to sufficiently consider secondary impacts and tradeoffs, (3) the misidentification of costs and benefits, (4) the inconsistent valuation procedures, and (5) the exclusion of induced benefits and costs.

While a number of industry concerns are addressed in the draft EIS on the 1985 program, the Public Lands Council remains concerned that the planning process continues to be based on poor to nonexistent data. Furthermore, the alternatives continue to use questionable and inconsistent economic valuation procedures for all resources, and utilize economic analysis based on research expediency rather than economic analyses necessary for proper policy formulation and implementation. The industry questions seriously why the 14.2 million AUM benchmark was not achieved in any of the alternatives, especially in the "high production" alternative.

Consistent with the finding of the Public Rangelands Improvement Act of 1978 that public grazing lands are producing less than their potential, the National Public Lands Council believes the Forest Service should take advantage of the many opportunities to increase forage production and to improve the condition of forest and range lands for grazing. We believe that such improvements will be equally beneficial to other competing uses and public demands.

Increased forage production can be achieved through sound management practices and land use plans which provide for: (1) rehabilitation of rangelands by seeding of grasses and legumes; (2) control of poisonous plants, noxious weeds, and other plants and shrubs; (3) increase of forage utilization through technological achievements in improved grazing systems and methods, and through innovative and flexible livestock management practices; (4) development of water facilities to enhance water utilization; (5) improvement of livestock handling and control facilites; and (6) implementation of soil and water conservation practices that enhance water quality through the reduction of soil losses; (7) increased private capital investments on public lands which range forage users are willing to make in return for less governmental impediments, and being given greater management flexibility.

Recognizing the weakness inherent in long-range forecasting, we believe that there will be an increase in the demand for livestock forage and that the Natinal Forest System should be managed so as to increase forage production to approximately 23 million AUMs by the year 2030.

The rationale behind this projected need for Forest Service grazing is based on the following factors influencing the demand for red meat: (1) population growth (expected annual world growth rate is two percent), (2) development of foreign markets for U.S., (3) increased disposable incomes of consumers (due to improved agricultural production (supply already outstrips demand by 40 percent, and public is becoming unwilling to support current schemes to reduce production), (5) increased demand for nonagricultural uses will shift water supplies to municipal, industrial, and mining uses, (6) growing public awareness of diet health issue (increases demand for leaner meat produced on range).

In conclusion, it is the desire of the range livestock industry to improve the productivity of the public lands through the many opportunities that exist to increase forage production. Such efforts would help maintain the viability of the western livestock industry as an integral part of America's food and fiber base, and would promote the stability of ranching families and dependent communities.

Sincerely,

Herb Metzger
President

cc: Ronald A. Michieli

Enclosure
sdb

UNITED STATES RECREATIONAL SKI ASSOCIATION

Mr. Thomas E. Hamilton
Director, RPA
USDA-Forest Service
P. O. Box 2417
Washington, D.C. 20013

Dear Mr. Hamilton:

The United States Recreational Ski Association, a national membership organization of individual skiers, submits the following comments on the Draft Environmental Impact Statement on the 1985-2030 Resources Planning Act Program.

Over fifty percent of the skiing in the United States takes place within the boundaries of our National Forest System. Much of the identified but undeveloped future terrain is also under the jurisdiction of the Forest Service. For this reason, skiers have a major stake in current, and future, land management goals and policies for this Agency.

This Association divides its support of the Alternatives outlined in the DEIS as follows. We believe Alternative Seven best meets the needs of skiers, and other forms of developed recreation, because recreation visitor use would increase from 227 million RVD to 410 RVD by 2030. However, we do not support this Alternative in regard to Wilderness. We believe this Nation to be better served in relation to Wilderness, with Alternative Two, which caps the National Wilderness System at 31 million acres in 2030.

Hoever, even though we have chosen Alternative Seven as meeting skiing needs, we are somewhat guessing due to the manner in which RPA deals with recreation. No alternative directly discusses the sport of skiing, nor do any give specific figures for either increasing or decreasing downhill skiing capacity, despite the fact that snow and ice activities are estimated to increase by 140%, the largest recreational increase of all, by 2030. We strongly believe downhill skiing, owing to its prominent position as a major National Forest recreational activity, should be broken out in each Alternative, as is Wilderness use. We need to know what each Alternative's impact will specifically be for our sport.

Despite many adverse factors; less disposible income, inadequate snow in some areas, increasing of competing recreational choices, the popularity of skiing continues to climb. The over 15% growth of previous years is moderating, but still curving upward. Yet ski development on public lands has been brought to a near

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standstill. The greatest reason for this halt in responding to increased levels of ski need with corresponding new development is the Wilderness-preservationist push of recent years.

Skiers are environmentalists. We strongly have, and do today, support a National Wilderness System. However, as in all things, too much is as damaging to this Country as too little. We seem to have lost our perspective, and no longer pursue Wilderness as a means to preserve a portion of our natural heritage still in its primeval state. Instead, today the Wilderness movement is an anti-growth campaign, a negative movement by a relatively small and extremely wealthy elitist group, who preach the theory of preservation as the only method of protection for our natural resource base.

USRSA rejects most firmly that contention. We believe we have the skill, the technology, and the sincere desire, to enjoy our beautiful heritage of public lands in many diverse ways without undue damage to the natural environment. We can no longer block use of our public land system by the many and varied recreational and resource users who are denied access to Wilderness areas, simply because the preservationists say the "sky is falling". Twenty years ago we were admitedly pursuing an unenlightened road, failing to carefully assess environmental needs, and to mitigate damage. We have, however, learned our lesson well, and today are capable of gently drawing forth the pleasures and treasures of our land, while we carefully nurture its future productivity and values.

This Association has chosen Alternative Two, as it relates to Wilderness, because we strongly urge a capping of the National Wilderness System at 31 million acres by the year 2030. We have much at stake as a Nation if we cannot wrest control of our resources away from the preservationist lobby, and restore some reason and responsibility to our land management decisions. USRSA is an association of skiers, speaking out for the estimated 19 million skiers in this Country, but skiing is only their recreation. Our members have a much broader concern than merely advocating more National Forest lands to skiing. As citizens of this Country, we understand the need for the timber, mining, grazing and energy resources located on our public land base. We tend to participate in other outdoor recreational activities in addition to skiing, and, therefore, support the needs of all recreationists----rockhounds, ORV users, hikers, equestrians, river outfitters and canoeists, mountain bikers, and a host of others, to a fair share of the public lands. It is a policy of USRSA to "promote cooperative sharing of our resources between competing public land users, to support use of the multiple-use concept to permit a broad range of necessary and legitimate public land activities", and in order to meet that policy goal, the rush to lock up America from Americans must be halted.

Skiing on National Forest lands represents an excellent mix of the public sector with the private sector. We are proud of the excellent manner in which ski area permitees operate, bringing skiing to this Nation's skiers, without government funding. We hope many future opportunities will arise for other non-skiing recreational partnerships on National Forest lands.

In summary, the United States Recreational Ski Association supports expansion of skiing and other developed recreational opportunities on National Forests, we urge greater reliance upon the multiple-use concept to address the many diverse resource needs of public land users, and we firmly endorse a capping of the National Wilderness System at 31 million acres as part of the Resources Planning Act Program of the United States Forest Service.

Very truly yours,

Nancy J. Ingalsbee
Director of Government Relations

International Association of Fish and Wildlife Agencies
1412 16th STREET, N.W. WASHINGTON, D.C. 20036 (202)232-1652
Jack H. Berryman, Executive Vice President

April 9, 1984

Mr. R. Max Peterson, Chief
USDA, Forest Service
Washington, DC 20250

Dear Max:

Enclosed is the International Association of Fish and Wildlife Agencies' comment on the 1985 RPA DEIS (Federal Register, Vol 49 #14, Friday, January 20, 1984). It was prepared by our Land Resources Committee, on instruction by President Besadny and the Executive Committee. Individual state members will file comments more specific to their immediate concerns and such comments should be given due consideration.

The Forest Service is to be commended for improvements made in preparation and display of RPA-85 program alternatives. We again express our strong support for the RPA process, promise to continue our conscientious and constructive review and insist that a direct linkage between RPA and natural resources agency budgets is essential.

Sincerely yours,

Jack H. Berryman
Executive Vice President

M-54

International Association of Fish and Wildlife Agencies

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Jack H. Berryman, Executive Vice President

April 9, 1984

Thomas E. Hamilton, Director RPA
USDA - FS
P.O. Box 2417
Washington, DC 20013

This comment on the 1985 RPA DEIS (Federal Register, Vol. 49 #14, Friday, January 20, 1984) was prepared by the International Association of Fish and Wildlife Agencies Land Resources Committee and represents IAFWA's official position. The Land Resources Committee is composed of 41 biologists, foresters, natural resource managers and administrators from as many states. Because the IAFWA and its state fish and wildlife agency members have a primary committment to balanced resource conservation and management, review of this document was given special emphasis. It is understood that individual state members will file comments more specific to their immediate interests. Our comments are separated into a critique of the data base used to prepare the program alternatives and a review of the alternatives contained in the DEIS.

1985 RPA Data Base

The program resulting from the 1985 planning process must serve two purposes. It must guide Forest Service program development and budgeting for the five-year period from 1986-1990; it must also ensure that public demand for goods and services produced by the Nation's forest and range lands projected through 2030, can be met. For any program to be acceptable, it must, at a minimum, be able to satisfy both short and long-term (through 2030) projected demands identified in the 1979 RPA Assessment and its Supplement.

A major improvement in the RPA process is the development of goal statements for each opportunity area. We have, however, several specific concerns over inconsistencies on the stated goals.

Goals for commodity and non-commodity outputs are treated differently. Most goals for non-commodity outputs include the phrase, "consistent with other resources uses and values." While this is a logical concern in managing all resources under multiple-use guidelines, it may be interpreted as a qualifying constraint on the management of non-commodity resources. The timber goal, to "increase and extend timber supplies while protecting the environment and providing opportunities for wildlife, recreation, and other multiple uses of forest lands," does not include this "consistency" constraint. 33

THIS LETTER REPRESENTS EXCERPTS FROM INTERNATIONAL ASSOCIATION OF FISH AND WILDLIFE AGENCIES' COMMENTS. FULL RESPONSE IS AVAILABLE IN RPA FILES.

Program Alternatives

The following resource findings are of special significance to IAFWA and have implications requiring response in any program alternative:

Timber — Less than 2/5 of the nations forestland is in federal ownership. Thus any alternative must address the contribution of private timberlands to the National goal, contain strong funding for State - Private programs and extend USFS leadership in multi-resource management of private timberlands. 30

Housing demand is unclear in the near future.

In the South, softwood harvests are projected to double and hardwood harvest is projected to triple by 2030. This same region is experiencing rapid population and industrial growth with resultant recreation demand. It is also the region with the most rapid rate of conversion of commercial timberland to cropland.

Water — Consumptive demands are projected to rise by 70% with irrigation being the largest use.

Instream demands are projected to double by 2030. These include navigation, hydro, water based recreation and fish and wildlife habitat.

(Any water yield increase would seem to be strictly a byproduct of harvest activity and negatively correlated with water quality improvement. One can hardly imagine that water yield will drive timber management or require innundation of scarce stream resources on NFS lands by flatwater reservoirs, if considered in a multiple use context. Removal of streamside vegetation and cutting to reduce transpiration losses are extreme single purpose measures deserving no place in a multiple use plan. The best contribution of NFS lands to the water goal is in the water quality areas of reduced sedimentation, temperature moderation and ground water recharge.) 3

Range — With only 2/5 of the rangeland in federal ownership and 1/2 of that producing less than 40% of forage potential, the projected 40% incrase in grazing demand will require additional private land and may portend a regional shift of forage resource demand with more contribution from marsh and woodland ecosystems.

Recreation — The projected increase in recreation use for which experience quality as well as quantity must be considered, may signal the need for a division of federal responsibility for meeting recreation demand. (USFS lands would seem to best accomodate dispersed use with non-capitol intensive facilities.)

Wildlife — Small game hunting opportunity is especially limited.

Some migratory species are exhibiting population changes thought to be related to habitat changes outside the United States.

Minerals (Recent substantial downward revision in energy use projections and rising concern over acid precipitation, make a 10 fold increase in coal demand by 2030 seem unlikely without significant coal export.) **5**

Alternatives

Alternatives 1, 2, 5 and 9 fail, in our analysis, to adequately recognize the important findings listed above. Alternative 8 seems irrelevant since Forest and State level plans are causing adjustments in demand and output projections as reflected in Alternative 6. Our comments will then be addressed to the remaining alternatives.

Summary Recommendation

The IAFWA believes the following action should be undertaken to complete preparation of the 1985 RPA program:

1. Non-commodity values should receive goal and program recognition equal to that of commodity values. **43**

2. USFS should, after consideration of input received, state a Preferred Alternative with rationale and criteria for its selection. Opportunity should then be allowed for additional public comment on a final DEIS. **32**

3. Peer review of values methodology and model design should preceed final DEIS release. **45**

4. Administration budget requests should reflect the same program balance as the 5 year RPA Program. The President's Statement of Policy should track progress toward RPA goals and recognize the need for continuity of effort. **42**

Jack H. Berryman
Executive Vice President

cc: Don Dexter, Chairman
IAFWA Land Resources Committee
State Fish and Wildlife Agencies

M-55

Natural Resources Defense Council, Inc.

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April 9, 1984

Thomas E. Hamilton
Director, RPA
USDA Forest Service
P.O. Box 2417
Washington, D.C. 20013

RPA Officer
Pacific Southwest Region
USDA Forest Service
630 Sansome Street
San Francisco, CA 94111

Dear Sirs:

Enclosed are the comments of the Natural Resources Defense Council, Inc. on the Draft Environmental Impact Statement: 1985-2030 Resources Planning Act Program. We appreciate the opportunity afforded us to review this document and hope our remarks are helpful in revising it. Please do not hestitate to contact me if you desire clarification of or elaboration upon any part of our comments.

Thank you for your consideration of our views.

Very truly yours,

Trent W. Orr
Senior Attorney

TWO:klw

Enclosure

EXCERPTS FROM NRDC'S COMMENTS ARE ENCLOSED. FULL RESPONSE IS AVAILABLE IN RPA'S FILES.

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Recycled Paper

The Natural Resources Defense Council, Inc. (NRDC) welcomes this opportunity to comment on the Draft Environmental Impact Statement: 1985-2030 Resources Planning Act Program (DEIS). Unfortunately, the DEIS demonstrates a disturbing lack of regard for sound multiple-use management of the National Forest System both in its overall approach to construction of alternative RPA programs and in its treatment of the individual resources that each alternative is supposed to provide. All the alternatives presented are tainted by a profound bias toward production of market commodities -- especially timber -- to the detriment of other forest resources; most of the alternatives are severely skewed toward such production. These comments will examine the various manifestations of this problem, looking first at issues of general importance to all alternatives and then to particular problems in each of several specific resource areas. The comments will conclude with a summary evaluation of several of the alternatives presented.

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I. GENERIC AND PROCEDURAL ISSUES

A. Underlying Bias Toward Timber Production

While we will return to this point in greater detail in the discussion below of the timber resource, we feel it important to underscore at the outset the extent to which the 1985 RPA Program alternatives are driven by single-use planning -- i.e., planning for timber production -- not true multiple-use planning as Congress has mandated. The bias toward timber is exemplified by the special treatment it receives in the DEIS. Timber is the only resource assumed to increase in value over time in the RPA alternative evaluations.

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B. Top-down Planning

NRDC has long been concerned that the RPA Program would be used to institute illegal top-down planning, dictating resource production goals to the Forest Service regions and the individual national forests without regard to the actual conditions and capabilities of those forests, despite the requirements to the contrary of the National Forest Management Act (NFMA). Planning for the 1985 Program has both revived this fear and provided contrary signals as to whether it is justified.

35

C. Lack of Detailed Environmental Impact Analysis

If it is really true that forest plans will be modified to accommodate the recommendations of the 1985 RPA program, rather than that the Program will be modified to reflect accurately forest-level resource conditions as identified in forest planning, the criticism to be advanced in this section of our comments is particularly apt. In short, our criticism is that the analysis of environmental impacts of the alternative programs is extremely superficial.

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Even if the Recommended Program will only provide guidance to national forest planning, as is its appropriate legal role, the environmental analysis of the alternatives is still hopelessly inadequate. Chapter 4 of the DEIS, which is purported to be the detailed alternative-by-alternative analysis NEPA requires, is even less specific than the comparisons of impacts among the alternatives offered in the final pages of Chapter 2. 2-46 ff. Many of the discussions that are offered on various topics are so brief and vague as to be valueless.[2/] The beginning of the environmental impact analysis of each alternative is a restatement of economic information available elsewhere in the DEIS.

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D. Lack of Preferred Alternative

The DEIS does not identify any of the nine alternatives as the preferred alternative. While this is not illegal, it is a disfavored procedure because it does not allow the public to focus its attention on the course of action the agency is likely to pursue.

This will, of course, be legally necessary if the preferred alternative ultimately chosen differs significantly from any of the nine alternatives presented in the DEIS. **32**

E. Hidden and Unjustified Assumptions

Before addressing specific resource areas, one further generic complaint must be lodged. The DEIS is full of hidden and unjustified assumptions that often leave the reviewer puzzled or incredulous. The former can be found, for example, in Appendix E, "Analysis Procedures," where the models upon which the alternative programs were based are summarily described without giving the reader the slightest idea of what assumptions underlie them. **45**

II. RESOURCE ISSUES

A. Timber

1. Overstatement of Demand for and Present Net Value of Softwood

The Supplement to the 1979 Assessment acknowledges that projected demand for softwood timber is somewhat lower than previously thought because of decreased housing demand. Supp., p. 14. (Interestingly enough, no across-the-board downward adjustment of projected softwood harvests in the various alternatives seems to have occurred as a result.) However, the projected demands for softwood timber still seem unrealistically high. **45**

2. Departures from Sustained Yield Harvest Levels

Programming departures into each alternative is highly inappropriate. Section 13 of the NFMA provides that a departure may only be planned if it is "consistent with the multiple-use management objectives of the land management plan." 16 U.S.C. § 1611(a). Thus, departures, by law, are dependent upon individual forest plans for their validity. As very few final forest plans even exist, it is incredible that the Forest Service, at the national level, is projecting departures under each RPA alternative program. **20**

3. Failure To Apply Principles of Cost-Effectiveness to Timber Production

Unlike most of the other resource goals stated in the DEIS, that for timber production is not explicitly constrained by a requirement of cost-effectiveness. We are surprised at this given the current administration's stated commitment to increased economic efficiency in forest management, as in other areas of government endeavor. See, e.g., President's FY 1985 Forest Service Budget, Executive Summary, p. 4. Many of the national forests have long records of timber sales programs that cost more to administer than they earn in receipts. **22**

4. Neglect of the Role of Private Forestlands

The Forest Service must seriously consider a new alternative that would look at the most cost-effective way for the nation's -- and not just the national forests' -- forestlands to meet our future timber needs, as well as its other renewable resource needs. **30**

M-57

B. Wilderness

Two further notes about the treatment of wilderness in the DEIS are in order. First, it appears to have been undervalued seriously, resulting in further skewing of PNV calculations toward timber-dominated alternatives. Further, their valuation of wilderness takes into account only its recreational value, ignoring all its other values. 43

Finally, under all alternatives, research of any sort on wilderness is pathetically low.

C. Wildlife and Fish

Further, the same "travel cost" method was used to put a price on wildlife and fish user days (WFUDs) that was used to value wilderness. F-10-12. This methodology, with its high discount of already understated values, is no more legitimate for wildlife and fish than for the roadless resource. 43

The DEIS's wildlife and fish valuation also displays an improper bias toward consumptive uses of this resource, supplying prices for hauls of commercial fish and pelts of fur-bearing species while ignoring the other values of the national forests' fauna.

D. Range

1. Unrealistic Demand Projections

As with timber, the DEIS seems to have overstated substantially the future demand for forage for livestock, and it has done so in a disingenuous way. Its future demand projections are based on an assumed ten percent per capita increase in red meat consumption over 1976 levels by 2030. 3-6. Ironically, the DEIS fails to mention that 1976 represented a peak in America's per capita consumption of red meat and that that consumption has declined since that year.

This information can only be discovered by consulting the Supplement to the 1976 RPA Assessment. Supp., p. 27. That document seems to attribute the recent decline chiefly to the recession and, based upon its rosy view of our economic future (including the previously mentioned projection of a remarkable quadrupling of disposable personal income in 2030, Supp., p. 2), projects the 10% increase. This ignores the major changes in American dietary habits in the last decade, attributable much more to health concerns and the cost of beef and lamb relative to other protein sources than to the depressed economy. RPA range planning would be more soundly served by a projection of per capita red meat consumption that was based on these factors than

2. Inappropriate Resource Goal

Like the forestlands of the National Forest System, its rangelands produce a wide variety of resources, and the Forest Service is under a multiple-use mandate to manage for production and protection of all these resources. Unfortunately, management of national forest rangelands seems to be as dominated by the provision of a single resource -- forage for domestic livestock -- as management of the forestlands is by timber production. Evidence of this can be seen, for example, in the DEIS's setting of an enormous range "benchmark" for livestock forage, G-2, and its references to the importance of controlling "poisonous plants, noxious weeds, and other undesirable plants and shrubs," 1-13, as if the flora on rangelands had no other value than as fodder for cattle and sheep. 39 11

E. Other Resources

1. Recreation

A few remarks are in order regarding the DEIS's treatment of recreation. In 1980, more than 43% of the recreation on federal lands (or 233 million recreation visitor days (RVDs))

occurred on the national forests. 1-8. The DEIS notes that demand for recreation is projected to increase steadily throughout the RPA planning period. Id. The document somewhat grudgingly acknowledges what seems readily apparent, i.e., that private lands are simply not going to be widely available for public recreational use, specifically the dispersed, outdoor recreation for which the national forests are frequently used. 1-9.

2. Water

Simply put, the resource goal for water is very vague, as is other information offered on the subject.[5/] The goal refers generally to "helping" to meet water quality (as well as quantity) needs without setting any general standard to be met. 3 NRDC suggests that, given the importance of national forest waters to human water consumption, 3-11, and to anadromous fisheries, a non-degradation standard should be part of the goal. The discussions of impacts of the alternatives on water quality are extremely cursory (see, e.g., 2-66), and the unsupported assertions that are made ("All alternatives would meet minimum ... water quality standards." 2-66) are seemingly belied elsewhere in the EIS by admissions that resident trout and anadromous fish habitat would decline to some extent under every one of the alternatives.

3. Minerals

Extraction of minerals, a non-renewable resource, can have profound consequences for the many renewable resources of the National Forest System. According to the DEIS, energy minerals alone (coal, gas, and petroleum) potentially underlie approximately fifty million acres of national forest lands, over a quarter of the total. 3-11. No similar figures are offered for hard rock minerals, which must bring the acreage with mineral potential even higher.

Sport Fishing Institute

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April 5, 1984

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Mr. Thomas E. Hamilton
Director, RPA
USDA - Forest Service
P.O. Box 2417
Washington, D.C. 20013

Dear Mr. Hamilton:

Thank you for the opportunity to review and comment on the draft Environmental Impact Statement for the Resources Planning Act Program, 1985-2030.

The general assessment of goals and opportunities associated with fish and wildlife resources within the National Forests (Section 1, pp. 15-16) appears to be adequate for the intended purpose.

The report would have been more useful if the discussions and tables pertinent to fisheries related topics had been developed in more detail and presented separately rather than combined as "Wildlife and Fish," particularly in the sections dealing with the resource base and environmental effects anticipated from implementation of the proposed alternative management regimens.

Also, the use of fish and wildlife user days (FWUD) as an estimator of man-day use to portray NFS Benefit Values (Table F.2) and the use of recreation visitor days (RVD) values in Table F.4 ("willingness to pay" value estimates) was confusing. This interchange of terms made it difficult to determine if the 12-hour day reflected by RVD values (Table F.4) fully accommodated the man-day values listed in Table F.2. Presumably, FWUD values listed in Table F.2 included a larger number of man-days reflecting a shorter duration (4 hours) than the arbitrarily assessed 12-hour RVD.

In addition, we did not find the arguments, as presented in Appendix F; pp. 11-12 for arbitrarily lowering the "willingness to pay" values by 37.5 percent, convincing. In fact, we believe the monetary values assessed for an angler man-day in the RPA program report were far too low. For example, out-of-pocket angler expenditures per man-day reported in the 1980 Survey of Fishing, Hunting and Wildlife-Associated Recreation (averaging $20.00 for each 4-hour fishing day) are considerably above the average RVD values presented in the RPA program report which reflected a 12-hour fishing day!

The National Non-Profit Fish Conservation Organization

This discrepancy becomes more pronounced when adjusted by the 23.7 percent increase registered in the January, 1984 Consumer Price Index (CPI) over January, 1980 values. CPI adjusted 1984 angler out-of-pocket expenditures per 4-hour fishing day would approach $24.73 per day.

A more realistic assessment of fishing man-day monetary values would appear to be in order as the major emphasis of the RPA report appeared to be directed to displaying the presumed economic effects anticipated by the implementation of various alternative management programs. A marked copy of SFI BULLETIN No. 333 is attached for your convenience.

Sincerely yours,

Gilbert C. Radonski
President

GCR/nah
Enclosure

cc: Dr. Larry Jahn
Dale Jones
Bob Herbst
Carl Sullivan

THE WILDERNESS SOCIETY

April 9, 1984

Mr. Thomas E. Hamilton
Director
Resources Program and Assessment
USDA Forest Service
PO Box 2417
Washington, D.C. 20013

RE: RPA Comments

Dear Mr. Hamilton:

Enclosed are our detailed comments on the Draft Environmental Impact Statement (DEIS) for the 1985 Resources Planning Act Program. This 1985 Program will set specific policy, program and budget direction for Forest Service activities for the period 1985-2030. Our organizations are vitally interested in the proper management of the nation's public and private forest and rangeland resources and support the RPA process as a way to set environmentally-sound short and long-term planning goals. We appreciate this opportunity to comment on the DEIS.

While we support the RPA as a process, we find that this DEIS falls far short of being an adequate decision-making tool for selecting a Recommended Program. As we discuss in detail in our comments, there are many serious flaws in the assumptions, values and alternatives which bias the DEIS against wilderness, fish and wildlife, recreation and the other non-market values. In addition, as in our comments on the RARE II EIS and the 1980 RPA Program EIS, we are handicapped by the failure of the Forest Service to indicate a preferred alternative; such an indication would allow us to focus our comments more specifically -- and usefully -- on the alternative most likely to be chosen.

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Finally, as we stated in our earlier comments on the "Alternative Goals" document issued in 1981, we are concerned that the early selection of goals precludes consideration of other valid goals. In the DEIS, we note that additional alternatives and goals for range, wilderness and timber need to be developed. For all these reasons, we urge the Forest Service to correct the analytical deficiencies, formulate additional alternatives as described below, identify a preferred initiative and re-issue the DEIS for public comment While this will require additional time, it will produce a final product that will have much greater public support, both in review by Congress next year and for use in future land management planning.

Among the deficiencies in the DEIS that must be addressed are the following:

WILDERNESS

* A full range of alternatives, not constrained by the RARE II recommendations, must be displayed and discussed.

* Impacts on wilderness resources should be described in terms of roadless acreage remaining under each alternative.

* The alternatives should more fully respond to the needs and opportunities identified in the Assessment, including the biological as well as the recreational values of wilderness.

FISH AND WILDLIFE

* Fish and wildlife use values should not be reduced based on questionable readjustments of professional studies.

* Costs for mitigating damage to fish and wildlife habitat from high levels of timbering and roading should be fully and clearly identified.

* A preferred alternative should set standards for the productivity of fisheries, as was done in the 1980 Program (where 90% of the potential for anadromous fisheries and 80% of the potential for resident fisheries were to be protected.)

TIMBER

* The DEIS exaggerates future timber values and undervalues non-market benefits, producing a consistent bias in favor of increased timber production and against wildlife, soil and water protection, recreation and wilderness.

* The alternatives fail to fully explain the role of private forest lands in meeting demands for timber and other resources; nor is there any description of the impacts of national forest programs on outputs from these lands.

* In light of recent evidence that the Forest Service timber sales program fails to recover costs in many regions, the DEIS fails to take a hard look at the cost effectiveness of this program even though this criterion is clearly applied to other resource programs.

WATER

*The DEIS does not consider the increasingly important issue of hydro-electric development on national forest lands and waters.

RANGE

*The DEIS should recommend legislation to raise grazing fees to recover administrative and management costs and return fair market value.

*The DEIS should establish a goal of restoring the range to a healthy condition and should examine reductions in livestock grazing lands as a means to that end.

As noted, many of the analytical problems in the DEIS must be remedied before we can make a fully informed decision about which alternatives to support. For example, while we generally lean towards the thrust of Alternative 3 (High Non-market), we believe that a much higher wilderness goal than 42 million acres can be achieved while still meeting the same levels for timber, range and other market outputs. In the 1980 Program, the so-called Alternative 4a provided for more wilderness than contained in the current Alternative 3 and yielded increases in timber outputs of several billion of board feet. Thus, it is imperative that additional wilderness options be considered. Judging from the experience in 1980 with Alternative 4a, we expect that there could be as much as 65-70 million acres of wilderness while still reaching the market outputs of the current Alternative 3.

Finally, we note that Alternative 3, which generally is aimed at conservationists' goals, has nearly the highest present net value (PNV) of all the alternatives. Its PNV, at $89.6 billion, is only slightly exceeded by the $90.5 of the High PNV Alternative. This confirms the long-held view of conservationists that sound, environmentally-oriented management of the national forests is economically optimal as well.

Sincerely,

Peter Kirby
The Wilderness Society

David Conrad
Friends of the Earth

V. Alaric Sample, Jr.
The Wilderness Society

Bruce Hamilton
Sierra Club

Pauline Plaza
National Audubon Society

Julie Macdonald
Sierra Club Legal Defense Fund

cc: John B. Crowell, Jr.
Assistant Secretary for Natural Resources and Environment

R. Max Peterson
Chief, Forest Service.

M-62

Wildlife Management Institute

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DANIEL A. POOLE
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Board Chairman

March 20, 1984

Mr. Thomas E. Hamilton
Director, RPA
USDA Forest Service
P.O. Box 2417
Washington, D.C. 20013

Dear Mr. Hamilton:

This letter offers the Institute's comments on the Draft EIS for the 1985-2030 Resources Planning Act Program.

While the planning exercise has value, it expectedly raises questions about the accuracy of data, validity of assumptions, and the mix of designated alternatives. Nevertheless, those are "problems" agencies deal with regularly and seek to overcome.

As a long-time supporter of the Forest Service's program and an advocate of balanced use of national forests, the Institute recommends Alternative 6 (Implement Plans) as the preferred alternative. It is the sole alternative, in fact, that provides for a reasoned and progressive national forest program.

EIS Alternatives 9 and 2 are totally unacceptable. We are aware of the history of those alternatives, and there is some suggestion among the private conservation community that Alternative 9 was added merely to divert attention from undesirable Alternative 2.

Sincerely,

Daniel A. Poole
President

DAP:msm

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THE WILDLIFE SOCIETY
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9 April 1984

Thomas E. Hamilton, Director
RPA, USDA Forest Service
P.O. Box 2417
Washington, DC 20013

Dear Mr. Hamilton:

The Wildlife Society is pleased to offer comments on the 1985 RPA Draft Environmental Impact Statement (DEIS). The Wildlife Society is an international nonprofit, scientific and educational association comprised of professionals actively working in wildlife research, management, education, and administration. The Society is dedicated to the wise stewardship of all natural resources.

The Wildlife Society supports the RPA process and offers these comments to encourage improved forest management planning activities.

The Society recognizes that Forest Service programs have profound impacts on wildlife and fish resources and that wise forest management practices may benefit wildlife and fish while providing commodities that help support this country's economy. The Wildlife Society has reviewed carefully the DEIS and has asked our chapters to respond separately. You may expect to receive additional comments from them. We have organized our comments into general concerns about the data base and some specific comments on the alternatives offered.

In reviewing the national goal for wildlife and fish, we noted that the term "consistent with other resource uses and values and user demands" places an inappropriate constraint on the goal. While this generally may be appropriate under the multiple-use approach to land management, such statements only appear for noncommodity outputs. The timber goal, for example, contains no such wording. This constraint should apply to all outputs.

The goal for wildlife and fish does not appear to recognize the assessment findings. The 1979 RPA Assessment Supplement "America's Renewable Resources: A Supplement to the 1979 Assessment of the Forest and Rangeland Situation in the United States" projects (1) continuing increases in market demand for fish and furs, (2) increase in "social demands" for fish and wildlife resources--55% for nature study, 90% for fresh water fishing, 69% for waterfowl hunting by 2030, and (3) "substantial indications of growth and public interest in existence values." It appears that the demands of wildlife and fish will be growing more rapidly than the available supplies.

It is assumed that hunting, fishing and nonconsumptive wildlife use is going to increase even though the carrying capacity of the habitat would decline dramatically under some alternatives. This unrealistic assumption should be reanalyzed. Wildlife and fisheries recreation use should be related to the habitat carrying capacity.

The wildlife and fish goal seeks only to assure a diverse well-distributed pattern of habitats for viable populations of wildlife and fish species, management to help recover endangered and threatened species, and an increase in native game and nongame species where consistent with other resource uses. A stronger commitment to wildlife and fish management must be made.

While substantial attention has been given to improving the commodity data base, wildlife and fish supply and demand data are poor. The assessment findings for wildlife and fish do not seem to recognize recent research findings such as the wildlife and fish related recreation demand data from the "1980 National Survey of Fishing, Hunting, and Wildlife Related Recreation" conducted by the U. S. Fish and Wildlife Service. This information must be considered and incorporated in the social demand analysis.

The values for hunting and fishing which were used to derive present and net value are not supportable. The 37.5% reduction of values discussed on pp. F10-F12 of the DEIS Appendix and developed specifically for the 1985 RPA appears to be an attempt to ensure that wildlife and fish use do not compete with commodity outputs, especially timber. These value data must be reevaluated by qualified independent professionals.

We are concerned about user data for wildlife and fish, particularly as they are attributed to range and timber programs. The analysis shows that there is a direct relationship between increasing timber and livestock output and increasing (induced) fish and wildlife use. In many cases, the opposite relationship is true. Increasing induced wildlife and fish use associated with increasing timber and livestock outputs is not supportable. In many areas the reduction of the number of livestock using the rangeland will be necessary to restore the land's productivity and to better meet the needs of wildlife.

We are concerned that wildlife and fish use is attributed to both the recreation and the wildlife programs. The wildlife program should receive all wildlife and fish use credit for hunting, fishing and nonconsumptive wildlife use to ensure that the program gets appropriate credit for its recreational outputs.

The contention that increased recreational access from road construction will increase wildlife and fish user days (WFUD's) in proportion to increased timber production is incorrect. Increased timber harvest can adversely affect wildlife and fish recreation by modifying carrying capacity. Such practices may benefit certain species associated with early stages of forest succession, but species dependent upon older growth may decline.

Increased road construction can provide opportunities for wildlife related recreation, but also may promote over-harvest and alter habitat and migration or movement behaviors of wildlife and fish populations. Restrictions on recreation access must be imposed to control these problems.

The habitat needs of many wildlife and fish species must be considered carefully in all timber management activities. It is difficult and erroneous to generalize as to the impact of such activities on wildlife and fish populations.

Wildlife and research programs do not seem to be responsive to the various alternatives considered in the DEIS. Specific problems, such as accommodating recreational use and commercial demand for wildlife and fish, must be addressed. In addition, special habitat concerns related to bottomland hardwoods, old growth, and wetlands must receive research attention. There must be improved inventory and monitoring studies to determine the effects of various forest management activities on wildlife and fish.

Of paramount importance is the need to provide the necessary financial and technical support for federal, state, and private management of wildlife and fish resources to meet the resource and public demands.

Several additional comments follow.

We strongly disagree with the statement that all alternatives will "prevent significant impairment of the land's productivity." For example, severe soil erosion is occurring in many forests currently and there is a great deal of concern about present timber harvest practices.

The DEIS discusses benchmarks or maximizations for timber and range. Benchmarks also should be established for wildlife and fish. The document assumes that wildlife generally benefits from forest or forage openings--more so than from old growth forest. This is not always true. The importance of shelter and thermal cover to many species of wildlife is not recognized; nor does the DEIS seem to consider that many forest birds survive better in mature forests rather than earlier successional woodlands. Dense mature timber stands are now scarce and therefore are extremely valuable habitats.

The document refers to increasing timber supplies by using dead trees and fence rows. Snags and fence rows should be protected because they are used by a wide variety of wildlife.

Areas to be explored for minerals and energy should be prioritized on the basis of the need for the mineral or energy source and the vulnerability of the area to disturbance.

Comments on Alternatives

The alternatives display a good range of outputs for commodities (primarily timber), but not for wildlife and fish. Every alternative, except Alternative 5, which is a reduced program for all resources, provides for increased timber production. In many places the existing timber outputs conflict with wildlife and fish objectives.

The range of alternatives is narrow, especially for nonmarket resources. This occurs despite a legal requirement to display a broad range of alternatives and the guideline to feature each goal and issue in at least one alternative. Alternative 3, with high nonmarket emphasis, still provides substantial outputs of timber, grazing, and minerals. Nonmarket values are derived from multiple-use rather than specifically from promotion of nonmarket values. There should be another alternative developed which optimizes wildlife and fish resources as was done for timber.

Alternative 1 is unacceptable, as it does not consider sound stewardship of all resources. Because of a lack of increased funding, many resources would suffer.

Alternative 2 promotes high market outputs, but does not ensure sufficient nonmarket outputs. Alternative 2 does not meet management or recovery objectives for endangered, threatened, and sensitive species, and would place more emphasis on nonmarket outputs from state and private forest lands. This alternative by its very nature of high emphasis on market resources would result in severe impacts on wildlife and fish resources. Furthermore, Alternative 2 would promote the reduction of the carrying capacity for game and nongame species alike. Under Alternative 2, wilderness, wildlife habitat, watershed management, outdoor recreation and research need greater emphasis due to the acknowledged problems that would occur with intensive timber management.

Although The Wildlife Society will not endorse any of the alternatives as stated, Alternative 3 seems to be the most appropriate of those listed under present market conditions. However, we have some severe concerns about this alternative as well. Although displayed as a nonmarket alternative, it still provides substantial outputs of timber, grazing, and minerals development and promotes a large decline in old growth which clearly is unacceptable. Although called the nonmarket alternative, a truly nonmarket alternative which promotes fish and wildlife as a major thrust is not considered.

Alternative 4 "provides a high level of outputs in all opportunity areas." However, there is still a disproportionate emphasis on the production of market goods.

Alternative 5 shows decreases in the funding for all programs, including commodities programs. This indirectly may benefit wildlife and fish resources which are adversely affected by lumber and grazing and other commercial activities. However, the adverse impact of decreases in funding for wildlife and other nonmarket resources probably would not be offset by the decline in commercial activities. Alternative 5 shows no intent to provide proper stewardship for natural resources.

Alternative 6 probably is the second best choice listed, but also reflects too great an emphasis on market goods to the detriment of nonmarket resources. This alternative neglects the need to maintain mature and old growth habitats as well.

Alternative 7 emphasizes economic value over values of important resources which cannot be measured readily in monetary terms. Even with this in mind, Figure 2.24 on page 2-85 demonstrates that the benefit/cost ratio for Alternative 3 is greater than for Alternative 7. If the originally estimated values for wildlife and fish were restored, the benefit/cost ratio of Alternative 3 may be even better.

Alternative 8 shows too great an emphasis on commodities and not enough on nonmarket resources. An evaluation of the accomplishment under the 1980 RPA period would be of value in predicting performance under this alternative.

Alternative 9 is deceptive. The term "high productivity" should indicate that timber management would be practiced primariiy on the most productive sites while maintaining the productivity of aquatic and terrestrial ecosystems. "High productivity" as used in this alternative is a misrepresentation of the actual intent of Alternative 9, which is to harvest timber on all forest lands, even those regarded as marginal. Timber management on these marginal sites is extremely expensive due to high costs for road building, difficult reforestation, etc. and there is a high potential for environmental degradation. Alternative 9 should be renamed "maximum timber" or "maximizing revenues to the treasury." We are extremely concerned that Forest Service policies for environmental protection which were developed by professional biologists, soil scientists, hydrologists, etc. are completely disregarded. This alternative cannot be implemented without changes in the law.

In conclusion, The Wildlife Society endorses a philosophy of multiple-use management of all natural resources on forest lands and wishes to reiterate our support for the RPA process. However, we feel strongly that numerous changes must be made to the available alternatives to accommodate nonmarket values in a spirit of sound resource stewardship before we can endorse an alternative. Furthermore, it is imperative that the RPA recommendations be closely linked to resource agency budgets in order to make the process an effective vehicle for promoting the wise use of all natural resources. Therefore, we suggest that the Forest Service make the recommended revisions, identify a preferred alternative, and provide an opportunity for public comment prior to finalizing the Recommended Program.

Thank you for the opportunity to comment.

Sincerely,

Harry E. Hodgdon

Harry E. Hodgdon
Executive Director

SOCIETY OF AMERICAN FORESTERS

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at Wild Acres • 5400 Grosvenor Lane • Bethesda, Maryland 20814 • (301) 897-8720

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COUNCIL MEMBERS

April 9, 1984

R. Max Peterson
Chief
USDA Forest Service
P.O. Box 2417
Washington, DC 20013

Dear Max:

Enclosed are the comments of the Society of American Foresters on the Draft Environmental Impact Statement (DEIS) on the 1985 Resources Planning Act Program.

As you know, the SAF Council chartered a task force to review the DEIS and prepare our comments. For your information, a list of the task force members is also enclosed.

Thank you for the opportunity to present our views. We look forward to working with the Service in the development of the 1985 RPA Program.

Sincerely,

John C. Barber

John C. Barber
Executive Vice President

JCB/JRL/lms

Enclosures

EXCERPTS FROM SAF COMMENTS ARE ENCLOSED. FULL RESPONSE IS AVAILABLE IN RPA FILES.

SOCIETY OF AMERICAN FORESTERS 5400 GROSVENOR LANE • BETHESDA, MD 20814 • (301) 897-8720

COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT

FOR THE 1985 RPA PROGRAM

RECOMMENDATIONS

The Society of American Foresters believes that the Resources Planning Act (RPA) of 1974 is sound legislation that can advance the management of the forest and range lands in this country. In particular, the periodic renewable resource Assessment (Assessment) and the renewable resource Program (Program) mandated by the act can be of great aid in reducing public controversy over the purposes to be served by lands in the National Forest System.

The Society also believes that the potential of RPA is not fully appreciated by the public, the Congress, or the chief executive officers of the federal government. Support exists but is currently latent. The following recommendations all have the purpose of increasing support for RPA, either by direct means or by improving the ways in which the Forest Service implements the provisions of the act.

1. The Forest Service should make the Assessment a continuing process in the sense that data are continuously and systematically updated and available for decision making.

2. Confidence in the Assessment would be increased if the Forest Service would obtain, from outside the agency, a rigorous review of analytical techniques, models, computer software packages, and data bases that are part of the Assessment and Program but have not yet had such review. **45**

3. The Program should respond to the needs identified in the Assessment. **36**

4. As a corollary, the Program should be considered a planning document, not constrained by expectations of short-term difficulties in funding. The RPA program as accepted by Congress should serve as the basis for preparing Forest Service budget requests. **42**

5. In presenting alternatives for public consideration, the Forest Service should indicate which one it prefers. Such an alternative, with decision criteria made explicit, should be developed and offered for public comment prior to release of the 1985 Program. **32**

6. The Forest Service should adopt a systematic process for generating Program alternatives (as opposed to the ad hoc process it currently uses and has used in the past).

7. The Program alternatives should be presented not only in the conventional format with large amounts of data presented in many tables and charts, but also in ways that are more comprehensible to a wider public.

8. Forest Service research must be clearly recognized as separate from national forest administration. Accordingly, the Assessment should have a section that ranks research needs of forests and rangelands regardless of ownership. The research component of the Program alternatives should then respond positively to these needs. **27**

9. Equally with national forests and research, the Program should respond to the needs and opportunities of lands in state and private ownership. **31**

10. Congress should be encouraged to give RPA full weight when Forest Service appropriations are debated. **42**

OVERVIEW

The DEIS is a substantial improvement over comparable earlier RPA documents. For one thing, the analysis it contains is generally superior, as are the qualitative descriptions of the effects of the various alternatives. For another, the data are better. The use of "national goals" to describe "a desired future resource situation" is helpful and represents a positive response by the Forest Service to public criticism of the 1980 RPA documents. The DEIS is shorter than its earlier RPA counterparts and is more readable.

The DEIS has a very significant problem associated with it. That is the slight interest it has generated in Congress, among decision-makers of groups historically concerned about the allocation of forest and range resources, and among the general public.

This problem is serious in two ways. First is the danger that Congress will fail to take advantage of the opportunities the RPA documents offer for improved management. Second is the possibility that issues only recently laid to rest by earlier Congresses will be raised again, taking time and effort that could better be devoted to other matters requiring congressional attention.

One of the reasons frequently suggested for the low level of interest is the complexity of the RPA process as it has evolved, as well as the length and complexity of the RPA documents. It is sometimes alleged that the Forest Service has purposely made the process and documents more complex and lengthy than need be, so that the agency can produce the results it wants, particularly budget results. However incorrect this accusation may be, the Forest Service must confront it.

M-66

Process for Development of the Program Alternatives

Of the nine Program alternatives, none are supported by an explicitly stated rationale. While the individual rationales are implicit in the description of each alternative, there is ample room for different readers to reach different conclusions. Furthermore, it is unclear why these nine, and not some other set, were selected for analysis. No useful purpose is served by this ambiguity and its elimination would provide a clearer context for analysis of the DEIS. 36

Analytical Techniques and Models

The task force recommends that the Forest Service establish and support one or more panels of authorities to review the analytical techniques and models used in developing Program alternatives and not heretofore subjected to such appraisal. The purpose, of course, is to increase the confidence that Congress and the public can have in the numerical values associated with Program alternatives. 45

Need for a Preferred Alternative

The DEIS contains nine Program alternatives, and since "no alternative is singled out" as preferred, each ostensibly is acceptable to the agency. This in itself is alarming, because not all of the alternatives are consistent with findings of the Assessment.

The public looks to the Forest Service for leadership in forestry. The requirement in RPA that the agency develop a Program provides it not only with the opportunity, but also the responsibility for presenting to the people of the United States a vision of how forest and range resources can contribute to the future well-being of the country. In laying out an array of alternatives without presenting its vision of the future, the Forest Service is foregoing an important opportunity. Effectively, the agency is not asserting its leadership in forestry. 32

Decision Criteria for Selection of the Preferred Alternative

Economic, social, biological, and physical criteria for selecting the preferred alternative exist in the DEIS. However, except for the criterion expressly stated in RPA--that the Program must be based on the Assessment -- the DEIS does not indicate which criteria will be used in selecting a preferred alternative nor is there any indication of the relative weight each criterion will be given.

Evaluation of the Program Alternatives in the DEIS

The task force evaluated the nine Program alternatives in the DEIS. Prior to doing so, it set three criteria for the evaluation. The alternatives had to respond positively to the findings of the Assessment. They had to exhibit consistency in the analytical treatment of resources as well as treatment of major Forest Service activities. The alternatives and the DEIS in which they are contained had to meet the requirements of section 4 of RPA, as amended.

Two conclusions resulted from application of these criteria. First, only four of the nine Program alternatives respond positively to the Assessment findings. They are alternatives 4, 6, 7, and 8. But alternative 6 is the preferred program levels from national forest and state forest planning, and where such planning does not exist or is incomplete, the 1980 RPA recommended program for individual national forests was substituted. Because many of the national forest plans are incomplete, alternatives 6 and 8 are much alike. To the extent they are equivalent, it can be argued that only three Program alternatives are responsive to the findings in the Assessment. 36 40

National Forests

The statement that only a few Program alternatives respond to the findings of the Assessment applies in the specific case of the national forests. The DEIS does not hide the fact that parts of some of the Program alternatives do not respond to the Assessment findings. Usually the consequences are plainly noted. For example, with regard to Alternative 5 it is said: "A significant reduction in outputs from the national forests would increase pressures on state and private forest lands to meet demands for goods and services." 36

The principal problem with the Program alternatives with regard to the national forests is that there is no basis on which to judge their validity. Can, in fact, the National Forest System produce 15.2 billion board feet of timber, 10.7 million animal-unit months and 240 million recreation visitor days in the year 1990 at an annual cost of 2.715 million dollars as claimed for Alternative 2? No one outside the Forest Service can either substantiate or repudiate these numbers. They become literally a matter faith. Furthermore, there is no discussion of the interactions among the production levels of various resources. These multi-resource interactions are crucial to National Forest System planning and are not clarified anywhere. These two failings seriously limit the usefulness of the DEIS. 40

State and Private Forestry

Neither the DEIS goals nor issues adequately respond to the findings of the Assessment documents with respect to private land management problems and opportunities. None of the nine goals provide enough information about how much of each goal would apply to nonindustrial private forests, industrial forests, or state lands. The range and recreation goals make no clear reference to state and private lands. 36 31

Since state and private forestry concerns are not adequately stated in the goals and issues, it is not surprising that they are not adequately addressed in the Program alternatives. Three major comments are pertinent.

1. None of the nine alternatives display decreasing, constant, or slightly increasing national forest outputs and costs with greatly increased state and private forestry outputs and costs. If the alternatives provided a full range of choices, at least one would have allocated a large part of the Forest Service budget to state and private forestry. It appears that the alternatives have been constrained to reflect the current administration's intention of down-grading state and private forestry programs.

2. The DEIS treats the national forests in much more detail than it does state and private forestry. For the national forests, it correctly focuses on inputs and outputs of the Program alternatives. For state and private forestry programs, however, attention is primarily on inputs (e.g., the number of acres reforested) rather than outputs (e.g., the amount of additional timber that will result from reforestation). This inconsistency makes it difficult to compare benefits of investments in state and private forestry with those in national forest programs. Furthermore, little consideration is given to the nontimber outputs of state and private lands.

3. Although states make a substantial contribution to cooperative programs, only federal costs are displayed in the DEIS. State and private programs, however, are based on state as well as federal expenditures. The costs of state and private forestry programs relative to outputs are not made clear. Thus state and private forestry cost data are of little use in evaluating Program alternatives.

The Forest Service should be commended for including a Program alternative based on state forest plans and national forest management plans. This alternative builds upon the extensive amount of resource and program analysis done as part of state and national forest planning, and is a positive addition to the range of alternatives in earlier RPA programs.

Research

The only place in the DEIS where research priorities are indicated is in the tables of projected research costs for each alternative in Appendix L. As shown in Figure 1, there is little change in research emphasis from one alternative to another among the major research categories. Even within the major categories, such as those related to timber production, the variation is small. Each category keeps its current share of the research budget regardless of changes in overall Forest Service program emphasis.

The lack of variation among alternatives and budgets implies that serious consideration of research potentials was not the clear intent of the DEIS.

27

M-68

ISIA

International Snowmobile Industry Association

April 9, 1984

Mr. Thomas E. Hamilton
Director
Resources Program and Assessment
USDA - Forest Service
P.O. Box 2417
Washington, D.C. 20013

Dear Mr. Hamilton:

We are pleased to offer our comments on RPA '85: The Draft Environmental Impact Statement -- 1985-2030 -- Resources Planning Act Program. We recognize the substantial effort involved in the preparation of this planning document, particularly the detailed evaluation of the nine alternative management plans.

Since we understand that the final management plan that will be selected by the Forest Service is likely to combine elements of several alternatives, rather than to focus exclusively on one, we have not attempted to choose one alternative as the most desirable from our perspective. Instead, we offer the following general comments which we hope will be helpful in the selection of the components incorporated into the Forest Service's Recommended Program.

We know that the Forest Service must respond to many different needs and attempt to meet many different goals, e.g., producing and protecting resources, managing wildlife, providing opportunities for recreation, in a balanced fashion. Maintenance of that balance should be an important element of the final management plan. At the same time, we recognize that the next fifty years offer great challenges to Forest Service management. As outlined in America's Renewable Resources: A Supplement to the 1979 Assessment of the Forest and Range Land Situation in the United States, demands for timber, water, forage, outdoor recreation, Wilderness, wildlife and fish will all increase markedly as the U.S. population grows to 300 million, as purchasing power triples and as economic activity quadruples. Because these developments cannot be prudently ignored, we have rejected three proposed management alternatives: Alternative 1 - Constant Outputs, Alternative 3 - High Nonmarket, and Alternative 5 - Program Reduction.

7535 Little River Turnpike
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Annandale, Virginia 22003
(703) 642-5850

We are pleased that meeting America's recreation needs is accorded substantial importance throughout this document. Too often the importance of recreation is lost in the debate over land-use policy between commodity producers and preservationists. Over the next 50 years, as lifestyles become more highly urbanized and faster paced, the role of recreation in protecting our mental and physical well-being assumes even greater importance.

The need for recreation generally and outdoor recreation specifically does not end with the coming of winter. As the Forest Service's 1979 Assessment pointed out, the most rapid growth in outdoor recreation has been in winter activities. Snowmobiling in particular has allowed people of all ages and physical abilities to enjoy outdoor winter activities that had previously been limited to those few with extremely strong constitutions. Therefore, as it plans for the future, the Forest Service must plan to meet this growing need for both motorized and non-motorized winter recreation.

While we applaud the Forest Service's recognition of the importance of recreation, we also caution against the increased use of Wilderness designation as a means of meeting recreation needs. We are also concerned that increased Wilderness designations may handicap necessary and appropriate use of our natural resources.

The passage of the Wilderness Preservation Act of 1964 by the U.S. Congress was prompted by growing public sensitivity to the dangers of short-term resource policies which had permanently scarred acres and acres of public and private lands. An urban, affluent public took new interest in the warnings of the conservationist movement's leaders. Dramatic evidence of long-term adverse effects on the environment attracted media attention.

Unfortunately, the increased sensitivity to environmental concerns has tended to lead to an over-reaction, from a doctrine of exploitation to a doctrine of anti-use where human management has been minimized or prohibited. Moreover, this new doctrine has met with favor among many whose personal lives are well insulated from the realities of Wilderness but who are unhappy with the urban and suburban environments in which they dwell. Many of these people fail to understand the relationship between land management and the resources necessary to make our lives fulfilling.

Regarding recreational use of existing areas, analyses of large Wilderness zones show significant problems of access, resulting in concentrated areas of overuse by human visitors, with resulting adverse effects on vegetation, wildlife, soil and water. While not unique to Wilderness, these problems are exacerbated by management constraints imposed in these areas. Since most trips into Wilderness areas are short, both in distance traversed and hours spent, heavy use of the peripheral areas results.

Basically, all of the vast areas of Wilderness are being created for a very small segment of the population who wish to make extended visits into Wilderness areas. The overwhelming majority of the population (with few exceptions, the old, the young, the disabled and the millions of families) has been effectively locked out of these public lands by circumstances beyond its control. This is in sharp contrast to the original intent of the U.S. Wilderness Act's sponsors, who intended that the management of Wilderness should allow its use by a wide spectrum of citizens.

To assign a high value to Wilderness lands that will receive low levels of use in an era when competition for recreational use of land is keen and growing would not be prudent management.

Finally, we would like to address the idea, contained in the section of the document dealing with national goals, that the Forest Service should "move toward recreation users assuming a greater share of the cost of providing recreation opportunities." Assuming that meeting such a goal would necessarily involve the passage of legislation, we offer the following comments.

We believe that user fees are a realistic approach to providing the Forest Service with recreation-site funding. Therefore, in a general sense, we support user-fee legislation. Having taken that position, however, there are two questions that must be addressed in evaluating legislation dealing with user fees.

First, would the legislation establish a "closed-loop" system whereby those directly responsible for collecting the fees would be given authority to disburse that income? We believe that legislation that did not provide for a "closed-loop" or that defined the loop in very broad terms would not be appropriate. For example, we could not support a user-fee system that allowed user fees collected from snowmobilers in Michigan to be spent on boating facilities in Mississippi.

The second question deals with the appropriations process. Would the legislation permit the Congress to look at user-fee receipts and consider those revenues in determining -- and perhaps reducing -- Forest Service appropriations? Since Forest Service programs make certain recreational opportunities available to all citizens, those citizens should rightfully expect to support recreation programs with their tax dollars to a considerable extent. Legislation that shifted that basic obligation disproportionately to a select group would not be appropriate.

Traditionally, snowmobilers have been proud to pay their own way, through registration fees and gasoline taxes, in the enjoyment of their recreation. This attitude has produced a remarkable system consisting of 190,000 miles of trails that is in place throughout the snowbelt. Today several states are experimenting with additional user fees. However, jurisdictions have found that, to have any chance of success, they must deliver a quality experience for the money demanded -- groomed trails as an example. Otherwise such fund-raising efforts are met with substantial resistance.

We recommend that any legislation proposed by the Forest Service be tailored to ensure that the monies collected benefit the users paying the fees and that the fee system be set up as an addition to, rather than a partial replacement for, the present appropriations process.

In closing, we hope these general comments will prove useful as the Forest Service prepares its Recommended Program for the next 50 years. Finding the best way to meet America's diverse needs, now and in the future, is a most difficult process. We appreciate the opportunity to help the Forest Service meet that challenge.

Sincerely,

Roy W. Muth
President and Chief
Executive Officer

RWM/jc

M-70

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Washington, D.C. 20230

OFFICE OF THE ADMINISTRATOR

May 4, 1984

Mr. Thomas E. Hamilton
Director, RPA
USDA Forest Service
P.O. Box 2417
Washington, DC 20013

Dear Mr. Hamilton:

This is in reference to your draft environmental impact statement for the proposed 1985 Resource Planning Act (RPA) Program. Enclosed are comments from the National Oceanic and Atmospheric Administration.

We hope our comments will assist you. Thank you for giving us an opportunity to review the document. We would appreciate receiving two copies of the final environmental impact statement.

Sincerely,

Joyce M. Wood
Chief, Ecology and
Conservation Division

Enclosure

DC:das

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

We have reviewed the Draft Environmental Impact Statement (DEIS) for the 1985 to 2030 Resources Planning Act Program (January 1984) and provide the following comments.

General Comments

The National Marine Fisheries Service (NMFS) is mandated to maintain and enhance, where possible, anadromous, marine and estuarine fishery resources. Accordingly, NMFS recommends selection of alternatives described in the DEIS which would maximize protection and development of anadromous fishery resources and research related to these resources, during the next four decades.

Anadromous fish of the Northwest, primarily salmon and steelhead, are produced in tributary streams of the Columbia River system, and in most coastal rivers. The stream production areas for spawning, hatching and rearing are almost entirely within Forest Service lands. About one-half of the original rearing habitat of the salmon and steelhead has been lost in the last century due to the advent of civilization through irrigation, pollution, hydroelectric dams, stream degradation, etc. It is absolutely necessary that the remaining habitat for anadromous fish be preserved and restored, in order that the valuable runs may become once again firmly established. It is with this in view that NMFS has reviewed the DEIS.

NMFS has found it very difficult to assess the status or proposed alterations of anadromous fish habitat programs in the DEIS. Those factors relating to stream habitat and riparian habitat, water quality, etc., are all presented in such a general way, and described with such vague details, that any assessment of change or evaluation is extremely difficult if not impossible. For instance, rather small percentage ranges of "improvements" are shown in many places, but there is no data base shown to compare the degree of change. We find that from the material presented, we cannot recommend any of the alternatives. As it is stated that no recommended alternative has been selected, and the final selection may be a combination of several, there is insufficient reference to make a choice. Alternative 3 does seem to come the closest to providing some rehabilitative and restorative possibilities for anadromous fish habitat. **40**

There is at present in the Northwest, great emphasis on conserving the habitat of anadromous fish. Not only has NMFS expended great effort in this regard, but other agencies and programs are presently making a concerted effort to maintain, conserve and improve fish habitat. Count among these; the States, the Columbia River Indian Tribes, the Northwest Power Planning Council, and the Pacific Fisheries Management Council. There will be increasing opportunity for the Forest Service to cooperate in joint efforts for habitat work in Columbia River headwater areas. NMFS will continue to coordinate with the Forest Service on all aspects of future work which may be planned for streams in forest areas.

EXCERPTS FROM NMFS FIELD OFFICES ARE ENCLOSED. FULL RESPONSE IS AVAILABLE IN RPA FILES.

United States Department of Agriculture — Office of the Administrator — Washington, D.C. 20250

April 9, 1984

SUBJECT: Draft Environmental Impact Statement-RPA 85 to 30

TO: R. Max Peterson, Chief
U.S. Forest Service

Thank you for your invitation to provide comments on the Draft Environmental Impact Statement for the 1985-2030 Resource Planning Act Program. Please accept our compliments for the quality of the program document that you have prepared.

In response to your request, we offer the following constructive observations:

We recognize that the document is intended to provide direction to Forest Service programs. However, the document does not clearly delineate between Departmental and Forest Service issues, goals and opportunities and whether these are related to National Forest system lands or private lands. This lack of clarity, coupled with no discussion of the programs of other agencies that either support or compliment Forest Service programs create a considerable amount of confusion on the part of both agencies and clientele groups as to what is implied. **37**

We are under the impression that the differences in estimates and projections between RPA and RCA had been resolved. There appears to be some discrepancies remaining.

Will program efforts be guided by the economic standard of cost effectivess? Within the context of the respective program statements, it appears that some program efforts will and others will not. Perhaps this should be clarified. **45**

There does not appear to be a description of the relationship between research problem areas and research emphasis within goals for each of the program alternatives. Without this, no assessment of the effect of the respective alternatives on research problem areas can be made. Which research problem areas will be emphasized for each of the alternatives? **27**

The document notes that four main agencies in USDA are active in International Natural Resources programs. We suggest that there are five. The fifth is the Cooperative Extension System represented by the Extension Service, USDA. We also wonder if a sixth should be added? That would be the Cooperative State Research Service **37**

representing the research function of the Land Grant University system. We would suggest that the International Program effort would be more effective if the leadership and mobilization of specialists were extended to include cooperators and not limited to just collaborators.

We suggest the addition of the word Agroforestry be added to the glossary.

Has consideration been given to a more substantive description of how programs implemented by other USDA agencies support and compliment Forest Service programs? The document does not contain any specific information in this regard. The lack of this information reduces the effectiveness of the document in representing a National program statement for forest and rangelands. **37**

We appreciate the opportunity to provide these review comments. We have appended more specific comments developed by our staff. If we can be of assistance to your staff in addressing the comments that we have supplied, please do not hesitate to let me know.

for MARY NELL GREENWOOD
Administrator

Attachments

EXCERPTS FROM STAFF REVIEW COMMENTS ENCLOSED

M-72

Community impacts, particularly on roads and bridges, appear to be inadequately considered. While noting (pp. 4-10) that major new developments, insufficiently planned, may overburden community facilities and services, I see no positive recommendations for using increased FS revenues from such developments to assist such communities. Couldn't the EIS alternative scenarios include such assistance? **10**

The report discusses "moderate adjustments to occupational subcultures (such as ranchers and loggers), and the lifestyles within communities..." (e.g., pp. 4-10).

What adjustments in "occupational and other subcultures," and what "lifestyle changes in communities" would occur, if the RPA planning process were to recognize the presence of, and develop scenarios for either eliminating or legitimizing, the currently illegitimate, illegal, and allegedly very lucrative practice of raising marijuana on national forest land? What are the current environmental impacts of this practice? **10**

There is no discussion as to how private lands figure into demands and outputs for wildlife, recreation, and environmental quality. There is no EIS statement as to the effect of high NFS timber outputs on markets for private timber and related landowner investments. **30**

THE S&PE component is very narrow in scope and limited only to S&PE programs of the FS. There are no discussions as to relationships with other Agency programs of the Department. This is true also for Research. **37**

I have been disappointed in the 1975 and 1980 RPA Reports as they related to range activities. It was my hope the 1985 report would provide a better treatment of range management. Unfortunately, I found little improvement over the earlier presentations. Part of this must result from the fact that of the 26 individuals who are listed as members of the resource program and assessment staff and RPA interdisiplinary team, there is not one who is identified ashhaving a range background. There are only two identified as wildlife biologists.

The increased demand for grazing seems to be greater than that which has been shown for RCA. The acres of forest and rangeland appear different than those in RCA. It was my understanding that there was an ongoing effort to reconcile the differences that had occured in the 1980 RPA and 1980 RCA reports. If significant progress has been made between Soil Conservation Service and the Forest Service, the updated information should be used in this document. **40** **37**

There is little difference between the nine alternatives in its impact on national forest rangeland activities. From the nine options, there are only two, No. 3 and No. 5, that aressignificantly different in the number of allotment management plans that will be available in the year 2030. There is little change in range activities as the proposed funding increases from $1,845 million dollars to $3,025 million dollars. **12**

United States Department of Agriculture | Extension Service | Natural Resources and Rural Development | Washington, D.C. 20250

April 6, 1985

SUBJECT: Draft Notes on RPA DEIS

TO: Andy Weber
Natural Resources

I have reviewed the RPA REIS as requested and have the following comments:

The document is obviously the product of much work and effort on the part of the Forest Service. Certainly we will be able to use some of the information for program planning purposes in ES.

However, the document falls short of addressing all EI's relating to alternatives presented. It is essentially an NFS document with little mention of market and non-market outputs and impacts related to private lands.

There is no discussion as to how private lands figure into demands and outputs for wildlife, recreation, and environmental quality.

There is no EIS statement as to the effect of high NFS timber outputs on markets for private timber and related landowner investments.

The S&PF component is very narrow in scope and limited only to S&PF programs of the FS. There are no discussions as to relationships with other Agency programs of the Department. This is true also for Research.

FRED DENEKE
Natural Resources

M-73

United States Department of Agriculture | Office of International Cooperation and Development | International Research Division | Auditors Building Washington, DC 20250

APR 11 1984

TO: R. Max Peterson
Chief, Forest Service

FROM: Joan Wallace
Administrator

SUBJECT: Review of 1985 Resource Planning Act Program

The Office of International Cooperation and Development (OICD) is pleased to have the opportunity to comment on the 1985 Draft Environmental Impact Statement for the Resource Planning Act Program.

We have enjoyed an excellent working relationship in international programs with the Forest Service. Many beneficial forestry-related cooperative research projects have been completed under Public Law 480 agreements. We hope that cooperative efforts will increase substantially in the future under a variety of funding mechanisms in several developed and developing countries with forestry-related research needs. This will increase the role of the Forest Service in providing scientific and technical expertise. It will become increasingly important to have scientists with multi-lingual and social science capabilities to interface with foreign researchers and institutions.

We particularly support alternatives 6 and 8, as they provide for an International Forestry program that most closely meets our projected needs for cooperative research.

OICD recognizes the need to strengthen the global commitment to protect the world environment and develop international approaches to improved management of forests and rangelands. A number of high-priority research areas have been identified for which the Forest Service may be called upon to provide scientific assistance:

- regeneration and growth
- biotechnology and genetic engineering
- utilization of hardwoods
- range production
- processing and use of wood products
- fuelwood
- atmospheric deposition

We hope the Forest Service will develop increased capabilities and long-range research programs which support international efforts in the above research areas. We look forward to continuing our mutually beneficial relationship in international programs.

United States Department of Agriculture | Foreign Agricultural Service | Washington, D.C. 20250

Mr. Max Peterson, Chief
Forest Service
U.S. Department of Agriculture
P.O. Box 2417
Washington, D.C. 20013

Dear ~~Mr. Peterson~~ MAX:

Deputy Chief Robert Buckman recently requested our comments on the Draft Environmental Impact Statement for the 1985 Resources Planning Act Program. Our comments are in the enclosed memo for Tom Hamilton of your staff.

We appreciate your consideration in requesting our comments and commend the close cooperation developing between the Foreign Agricultural Service and Forest Service in matters pertaining to international trade. We look forward to providing any additional assistance you may require, and hope to work with you as you carry out your international research and programs.

Sincerely,

Richard A. Smith
Administrator

Enclosure

M-74

United States Department of Agriculture | Foreign Agricultural Service | Washington, D.C. 20250

TO: Tom Hamilton, Director
Resources Planning Act Program
Forest Service

FROM: Vernon L. Harness, Director
Forest Products Staff
Vernon L. Harness

SUBJECT: Comments on Forest Service Draft Environmental Impact Statement (DEIS), 1985-2030 Resources Planning Act Program

We appreciate the opportunity to comment on the comprehensive DEIS.

In general, programs within the Forest Service research of particular interest to FAS include:

1. Support on disease and insect issues which cause problems in our international marketing efforts. Particularly useful to us would be research on the transmission of disease and insects in raw materials and finished products, and when applicable, low cost preventive measures on treatments.

2. Continued studies of the utilization of lesser known U.S. species, which may also be applied in foreign markets for U.S. products.

3. Research with the monitoring of forest inventory changes using remote sensing for tropical timber areas and other areas where inventory data is unavailable or unreliable.

Specific comments on the DEIS are as follows:

1. Regarding the non-industrial private forest land (NIPF) owner, State and Private Forestry could also serve as a contact point and information source on domestic and international wood products markets. (Page 1-3) **31**

2. The goal for International Forestry could include "improving wood products utilization" in foreign countries. (Page 1-17)

3. Last sentence of the third paragraph under "International Markets": The term "light frame structures" is out of context and the sentence should end after "markets." An additional statement could be added which more clearly identifies the opportunities for satisfying the large demand for adequate housing in development countries with wood-based (e.g. timber-frame) construction systems. Research could be directed toward determining the best means of meeting this demand. (Page 2-70)

4. Add "Foreign Agricultural Service, USDA." (Page 6-3)

5. We suggest that the general statement that all international programs of USDA are coordinated through OICD should be clarified. (Page J-1)

M-75

United States Department of Agriculture
Soil Conservation Service
P.O. Box 2890
Washington, D.C. 20013

Subject: Review of Draft Environmental Impact Statement on the 1985 RPA Program

Date: APR - 9 1984

To: R. Max Peterson, Chief, FS

File Code:

SCS has reviewed the FS's Draft Environmental Impact Statement on the 1985 RPA Program. We believe the document provides an important step in updating FS programs for the management and use of the Nation's forest and range land resources. We support those alternatives that strive for multiple-use sustained yields of timber, water, wildlife, and fish resources.

There is some concern that several of the alternatives allow for encroachment of FS control into private land management and technical assistance that has historically been provided by SCS or other agencies within the Department of Agriculture. The description of alternatives also appears inconsistent in that soil and water resource improvements are described in detail in some alternatives (Alternative 2) but not described in others (Alternative 9).

If our interpretation of the data in Chapter 4 is correct, wood production from National Forests exceeds that from private lands for most alternatives. The accuracy of this data is questioned considering National Forest commercial acreage is only about 18 percent of the national total. We believe the bulk of wood production will be from private land and the mechanisms need to be provided that assure other agencies can assist the private sector produce at levels projected without adverse effects on soil and water resources.

Some of the alternatives are so similar that investments and outputs are difficult to distinguish. Program costs also increase from $1.6 billion to $3.4 billion depending on the alternative. Consequently, it is suggested that Alternatives 2 and 9 and Alternatives 6 and 8 be combined and that budget increments be reconsidered in view of RPA budget guidelines which state, "Alternatives should provide a realistic and achievable transition from current program and budget levels."

The highest level of productivity (long-term sustained yield ÷ acres of land suitable for timber production) is displayed in Alternative 9. We question why levels of productivity are not higher under some of the other alternatives which consider fewer acres and, we assume, on the

average are more productive. An alternative should be developed reflecting a high level of productivity on those acres selected for timber management for options other than maximum production on maximum acres.

The enclosed material provides additional comments and elaborates on the concerns expressed above.

The opportunity to review this document is appreciated. We look forward to continued coordinated efforts in the management and wise use of our Nation's natural resources.

PETER C. MYERS
Chief

Enclosure

M-76

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

In Reply Refer To:
ER-84/86

Mr. Thomas E. Hamilton
Director, RPA
USDA-Forest Service
P.O. Box 2417
Washington, D.C. 20013

Dear Mr. Hamilton:

This letter is in regard to our review of the draft environmental statement for your 1985-2030 Resources Planning Act Program.

General Comments

It is recognized that with a draft programmatic environmental statement (DES) such as this one, generalities are often unavoidable. It is assumed, however, that the site specific projects resulting from the selected alternative of this DES will address environmental impacts in a detailed, analytical manner.

Two problems posed by the general nature of this document are in regard to fish and wildlife habitat and recreational activities. There is no indication in the DES what growth stages will be harvested under the various timber management alternatives. Old growth forests, for example, are very valuable in maintaining wildlife habitat diversity; however, the various plans in the document do not indicate how much old growth forest will be preserved with each alternative. In regard to recreational activities, the document does not differentiate between non-consumptive activities such as birdwatching, consumptive activities such as fishing, or more impact-related activities such as off-road vehicle use. A better picture of the impact of these activites on wildlife would be portrayed if each alternative related their intensity of occurrence or expected occurrence.

There is a tendency for fixed timber harvest quotas to unnecessarily limit management options for other natural resources, particularly fish and wildlife. It is suggested that some flexibility be maintained with long-term timber commitments so that fish and wildlife protection recommendations are not precluded. Perhaps, periodic review, i.e., every 10 years, could be programmed to assess impacts of timber harvest quotas on other agencies' resource commitments such as the Fish and Wildlife Service's Mitigation Policy (Fed. Reg., Vol. 46, No. 15, Jan. 23, 1981).

Forest planning and environmental analysis should consider the importance of maintaining or increasing the quantity and quality of ground water recharge. In addition to the discussion of surface-water bodies, it is suggested this document also address impacts to stored ground water, the potential for recharge, and the management of ground water.

Forest Service-managed recreation on the lands administered by other agencies may be an area this document should also address. For example, 55 areas (19 percent) of the Bureau of Reclamation's 290 areas providing recreation opportunities are managed by the Forest Service. Corps of Engineers' land would add even more acreage to this category. These are water-related recreation areas and this document states (p. 3-8), "Participation in water-related activities is projected to increase by 106 percent by 2030." In addition, most of these areas, managed by the Service, are in the arid West having significant population growth.

Specific Comments

Page 2, National Goals, Range. We suggest that prevention and reversal of desertification processes resulting from overgrazing be included in the range improvement goal.

Page 3, National Goals, Wildlife and Fish. The wildlife and fish goal fails to mention quality of habitats. Enhancement of habitat quality may result in greater resource numbers for consumptive, as well as nonconsumptive, use.

Page 6, Comparison of Alternatives, Table 1. The use of wildlife and fish user days (WFUD) as a measure of impacts tends to be unclear. It is suggested the document emphasize the broader measurement system also used in the document, impacts on potential numbers of key indicator species, and pounds of commercial fish harvest.

Page 10, Physical Effects, Soil Productivity, and Water Quality. The effects of road construction for timber harvest on soil and water resources should be analyzed.

Page 11, Table 3, Comparison By Alternative of Environmental Consequences. The summary statistics for fish and wildlife habitat in Table 3 are somewhat confusing. The table suggests that Alternative 1 would increase habitat-carrying capacity. The confusion could be reduced if the net change were included in the table. For example, the column for Alternative 1 would relate 5 (95-100), indicating a slight decrease in habitat conditions from 1985 baseline conditions.

Page 1-7, 8. The discussion regarding Resource Supply and Demand discusses board feet and cubic feet. This tends to be confusing to a reader unfamiliar with the conversion of these figures.

Page 1-8, first paragraph. Old growth forests are particularly important to certain fish and wildlife resources. It would be appropriate in the final environmental impact statement to compare the costs associated with timber production from lands supporting old growth and those associated with lands that have been replanted and are available for harvest.

Page 1-10, Minerals. The problems confronted by the mining industry should be presented in more detail.

M-77

Page 1-13, Range Opportunity Area, Goal. The needs of wildlife in the range environment should be included in the goal.

Page 1-13, Range Opportunity Areas, Opportunities. Reduced grazing and the resulting increased forage production is an opportunity that should be included in this section. In the long run, less grazing pressure can increase forage capabilities to support higher levels of wildlife species as well as livestock.

Page 1-14, Recreation Opportunity Area, Opportunities. The addition of a fish and wildlife resource opportunity that emphasizes the improvement of habitat carrying capacities is recommended. Such an opportunity would provide additional fish and wildlife resources for both consumptive and nonconsumptive fish and wildlife recreation days.

Page 1-14, Wilderness Opportunity Area, Opportunities. Consideration should be given to controlling public use through permits or other means when fish and wildlife habitat impacts are occurring due to over-utilization of wilderness areas.

Page 1-15, Wildlife and Fish Opportunity Area. It is suggested the goal should include the need to protect, expand, and enhance the winter range of big game species. Housing, industry, mineral development, and transportation facilities are reducing the critical habitat for such species.

Page 1-15, Wildlife and Fish Opportunity Area, Opportunities. An opportunity that emphasizes the need to mitigate for timber, grazing, water development, roads, and mining impacts is suggested. Specifically, projects that impact wetlands and riparian habitats and for species of high Federal interest should be identified for mitigation.

Page 1-17, Water Opportunity Area, Opportunities. Additional language to protect entire watersheds and to reverse desertification trends in the Southwest is suggested.

Page 1-17, Water Opportunity Area, Opportunities, Fourth Opportunity. The single interest of increasing water yields may not always be a desirable goal. Recognition of the value of increasing water quality, as well as quantity, is suggested.

Page 1-17, Water Opportunity Area, Opportunities, Fifth Opportunity. Fishery considerations should be included when there is a limited water supply, especially during low summer flows.

Page 1-18, Protection and Support Opportunity Area, Opportunities. The list of opportunities should include avoidance of unnecessary fish and wildlife habitat losses or impacts due to construction projects, mineral and water development, or other development projects.

Page 1-21, Issues, #5. Habitat quality should be considered when determining the implication of changes in wildlife and fish habitat relative to effects caused by other uses.

Page 1-90 and footnote of Table 2-41. The meaning of the statement, "Although management objectives for more of the endangered, threatened, and sensitive species are not met in certain alternatives, the objectives will be met eventually in all alternatives," is unclear. We suggest a more detailed explanation.

Page 2-3, Development of the Alternatives, first guidance on page. Here or elsewhere in the document, it is suggested there be a discussion of how resource objectives comply with legal requirements, such as the Endangered Species Act and Northwest Power Act.

Page 2-6, National Forest System. Paragraph 5 indicates carrying capacities will be reduced and wildlife recreation will be increased. These factors can work only to reduce the quality of wildlife recreation. Specific efforts should be included to improve habitat quality to offset this impact.

Page 2-8, State and Private Forestry, Table 2.2. Fish and wildlife resources are not considered in the State and Private Forestry Outputs, Activities, and Costs. If these resources are not a part of State and Private Forestry initiatives, then they should be identified as even more critical in the management of lands within the National Forest System.

Page 2-11, Alternative 2, paragraph 1. If the carrying capacity for species most commonly hunted and fished is decreased by 5 to 10 percent, it is incongruous that commercial harvests for some species could increased by 55 percent.

Page 2-23, third paragraph. The first sentence stating, "mineral exploration and development would be constrained due to the inability to process applications" is not consistent with the statement made on page 2-68, "mineral operating plans and lease applications would be processed promptly in Alternatives 4, 5, and 6."

Page 2-30, Alternative 7, second and third lines. The numbers related to fish and wildlife user days are not consistent with the numbers in Table 2.19. Clarification is required if commercial harvest of anadromous fish includes both sport and commercial fishing data.

Page 2-90. The terms "carrying capacity" and "habitat capability" are used frequently in the document and tables. We suggest a clear, succinct definition of these terms be given.

Pages 2-91, 2-92, 2-93, Tables 2.39, 2.40, and 2.41. It is not clear what analytical procedures and techniques were used to derive the fish and wildlife habitat carrying capacity estimates for each program alternative summarized in Tables 2.39, 2.40, and 2.41. It is suggested adding a section to Appendix F (Analytical Processes) to explain how these estimates were derived and assumptions made by the models.

Page 2-94. The "BASE" shown here is 1986. Other tables show 1986-2000. It is confusing to the reader when it is understood the plan is to be implemented in early 1985, yet the projections discuss the year 2030, and the tables show 1986-2000, etc.

Page 3-7, last paragraph. It is stated, "Rising participation in outdoor recreational activities has been related to increases in populations, per capita income, and leisure time." It is suggested that "and technological advances, e.g., ultralight aircraft, hot-air ballons, jet skis, surf sailing, parasailing, snowmobiles, etc., which require more resources and make former remote resources more accessible," be added.

Page 3-10, Minerals. In the second paragraph under this heading, future demand for coal and uranium is discussed and the following statement made: "For example, the demand for domestic coal is projected to rise nearly 10 times by 2030. The demand for domestic uranium shows even more rapid growth. The greatest increase in demand for both coal and uranium occurs after 2010 and reflects the shift associated with the growing scarcity of crude oil and natural gas in the U.S. and other producing countries in the world." The source of these projections should be related. On the basis of past production and present demand for both of these commodities, the projections appear to be extremely high.

Page 3-10, paragraph 2. It is not clear in what area furs and commercial fish are the chief market products. It appears something has been left out.

Page 3-13, Protection and Support Activities. It is suggested this section include mitigation for habitat losses due to construction activities.

Page 4-7, Wildlife and Fish. A pessimistic picture is painted with respect to declines in fish species. This discussion is carried over in the analysis of all subsequent alternatives. It is assumed that these projected declines will occur in spite of mitigation through good management practices.

Page 4-15. It is assumed that the statement, "black-tailed deer (BTD) habitat in Oregon and Washington would decline 20 percent," is in regard to Forest Service lands. The significance of the decline of 20 percent of BTD habitat on Forest Service lands, as related to total BTD habitat in the western U.S., would be relatively insignificant. The term "habitat capability" used here is unclear.

Page 4-19. Pileated woodpeckers are mentioned here, but not in other alternatives. When a threshold of 30 percent reduction in pileated woodpeckers is reached, this apparently triggers a concern. This "threshold" is unclear to the reader.

We appreciate the opportunity to review this document.

Sincerely,

Bruce Blanchard, Director
Environmental Project Review

M-78

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

APR 9 1984

OFFICE OF
EXTERNAL AFFAIRS

Mr. Thomas E. Hamilton
Director, Resources Program and
Assessment
USDA Forest Service
Post Office Box 2417
Washington, D.C. 200013

Dear Mr. Hamilton:

In accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act, the Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement (DEIS) for the 1985 - 2030 Resources Planning Act Program (RPA). Detailed comments are enclosed, and a summary of our major concerns follow.

The 1985 RPA Program represents the national level in the three-level integrated planning process of the Forest Service. The Program establishes goals and identifies opportunities which will guide the management of the Nation's renewable resources. The selected RPA Program will set the course for the management and administration of the National Forest System, Cooperative State and Private Forestry Program and Research initiatives administered by the Forest Service. Because the RPA will guide the Forest Service's budget proposals and land management planning and management activities at a regional and forest level, it is essential that the Program reflect an appropriate balance between economic efficiency and environmental quality. The goals and opportunities statements generally reflect this balance, however, we believe that additional opportunities for the maintenance and enhancement of water and air quality should be established.

The management for renewable resource production can have both complementary and competitive relationships with management for environmental protection. Of particular concern to EPA is the potential conflict between high market output alternatives and the protection of water and air quality. Silviculture, mining and rangeland activities leading to land disturbances generate nonpoint source (NPS) water pollutants. Forest and range management activities involving prescribed burning impact air quality. While the DEIS asserts that all of the alternatives proposed will meet the legal requirements of the Clean Water Act and Clean Air Act, such minimal compliance does not in our view, adequately reflect or promote the Forest Services' responsibilities under the Resources Planning Act and other statutes to "protect and where appropriate, improve the quality of soil, water and air resources."

In light of the renewed interest in NPS pollution control, we believe that the RPA Program should serve as a vehicle for promoting NPS control considerations in the National Forest System. The Program, in our view should clearly establish maintenance and improvement of water quality as a goal and establish specific "opportunities" for the attainment of this goal. Correspondingly, the selected Program alternative should reflect this goal. Our enclosed detailed comments expand upon this concern.

Additionally, air quality and visibility issues should be more fully addressed by the RPA Program. The DEIS mentions reducing air pollution through improved forest and range management practices and management of prescribed fire programs. However, air quality issues are referred to only in the opportunities section of the Protection and Support Opportunity area. EPA believes that air quality issues should be accorded higher priority by including maintenance of air quality and related visibility concerns as a management goal.

Overall, EPA believes that this third RPA Program provides an improved basis for making decisions concerning the management of the nation's renewable natural resources. This data base does, however, still contain limitations which must be clearly recognized in the selection of a recommended Program. Additionally, as we have indicated in the past, the scope of RPA program remains limited. Greater consideration still needs to be given to the contributions which non-National Forest lands can make in meeting the increasing demand for renewable resources.

Further, we are concerned that the Program alternatives, particularly the high market outputs options, do not adequately account for the costs of mitigation measures which will have to be taken to ensure that both the short-term and long-term quality and productivity of land and water resources are not impaired. This tends to bias the analysis of alternatives.

EPA is interested in working with the Forest Service to assist in seeing that these concepts are more fully addressed in the FEIS and recommended Program to Congress. We suggest that the Water Quality and Air Quality Work Groups, established pursuant to our Memorandum of Understanding, should meet to discuss the Program document.

EPA has rated the DEIS ER-2 (environmental reservations/insufficient information). This rating reflects our concerns that the absence of national level goals establishing a clear mandate for the maintenance and enhancement of air and water quality, will lead to on-the-ground environmental impacts. As stated above, the RPA Program establishes a framework for the land management planning processes at the Regional and Forest level which in turn guide specific land management practices. The Program should, therefore, provide clear and specific mandates for protecting and improving the environment. Further, we believe that additional information is required to fully assess the impacts of the RPA alternatives.

Thank you for the opportunity to comment. We look forward to meeting with representatives of the Forest Service to work towards a resolution of our reservations with the DEIS. Should you have any questions please feel free to contact me or Margaret Schneider (382-5070) of my staff.

Sincerely,

Allan Hirsch

Allan Hirsch
Director
Office of Federal Activities

Enclosure

M-80

United States Department of State

Washington, D.C. 20520

BUREAU OF OCEANS AND INTERNATIONAL
ENVIRONMENTAL AND SCIENTIFIC AFFAIRS

April 17, 1984

Dr. Thomas E. Hamilton
Director, Resources Program
and Assessment
USDA, Forest Service
P.O. Box 2417
Washington, D.C. 20013

Dear Dr. Hamilton:

I am responding on behalf of the Department of State to an invitation by Mr. R. Max Peterson to submit comments on the "Draft Environmental Impact Statement for the 1985 Resources Planning Act Program."

I will address myself almost exclusively to the international forestry component of what is a very comprehensive and well-prepared statement. My only comment with respect to the dominent "domestic" component is that I believe it is essential that the U.S. federal program reflect a careful balancing of market and non-market goals and values. The U.S. policy of promoting and assisting other nations to carry out improved resource management--with sustainability of a mix of economic, social and environmental values a principal element--is predicated in large part on the U.S. exerting leadership through example. Thus, it seems essential that the Forest Service program express through its balance and content a concern for the water, fish and wildlife and environmental aspects of forest management and utilization.

With respect to international forestry, this and previous Administrations have advocated a strong U.S. response in the international forestry sector, in particular by helping other countries to address the continuing destruction and degradation of the forests of the tropics. This is based in large part on perceived national self-interest, as well as on humanitarian concerns and U.S. international commitments. Congressional interest is also clear, given the series of overview hearings and amendments to the Foreign Assistance Act and State Department Authorization Act in recent years.

Since the issue attracted international attention in 1978, the overall U.S. effort in tropical forest management has evolved and expanded quite markedly. The U.S. Forest Service

has made major contributions, working cooperatively with the State Department, the Agency for International Development, other federal agencies and also with private sector institutions, including environmental organizations, universities and industry. This was consistent with, and responsive to, the "U.S. Policy, Strategy and Program on Tropical Forests" promulgated in May 1980, which has since been used to guide federal actions in this field.

With international awareness of needs and opportunities vis-a-vis forest management at an all-time high, and worldwide programs expanding as a result, it is important that the U.S. be able to continue to play a strong, supportive role. We envision a growing demand for U.S. technical advisory services, representation at international meetings, information exchange, and cooperative research. Consequently, we need to be able to look to a number of federal departments and agencies--and particularly the Forest Service (and AID)--to continue (and, we hope, strengthen) their commitment and participation.

Consequently, it is important that the Forest Service's forward planning effort anticipates a growing demand for Forest Service involvement in international forestry across the spectrum of its mandated capabilities, and that adequate technical and financial resources are provided. While we are not in a position to recommend among the alternative programs set forth in the draft EIS, we do urge that an approach be selected that reflects strong support of international forestry, and provides for steady program growth over current levels.

Thank you for the opportunity to comment.

Sincerely,

Bill L. Long
Director, Office of Food
and Natural Resources

M-81

CITY of HOONAH

P.O. Box 380
HOONAH, ALASKA 99829

Mr. Bill Edwards, RPA Coordinator
United States Forest Service
P.O. Box 1628
Juneau, Ak. 99802

Re: City of Hoonah Resolution on the RPA Process

April 10, 1984

Dear Mr. Edwards,

Please find enclosed a copy of a resolution passed April 10, 1984 on the RPA process. I realize this is after the comment deadline of April 9, 1984, however, I respectfully request you to allow these comments to be submitted as part of public testimony.

If you have any questions, please feel free to contact me.

Sincerely,

Michael D. Tavolfero
Hoonah City Manager

M-82

RESOLUTION NO. CCR-84-04-10-02

A RESOLUTION BY THE CITY COUNCIL OF THE CITY OF HOONAH RECOMMENDING ALTERNATIVE #8 UNDER THE RPA PROGRAM UPDATE PLANNING PROCESS TO THE UNITED STATES FOREST SERVICE

WHEREAS, The City of Hoonah is concerned about the production of anadromous fish as that supports local employment and traditional lifestyles; and,

WHEREAS, The City of Hoonah is concerned about wildlife because it supports traditional lifestyles and subsistence activities; and,

WHEREAS, The City of Hoonah is concerned about the protection of the environment in general and the quality of local water supplies in particular; and.

WHEREAS, The City of Hoonah is interested in increasing recreation opportunities for local residents and visitors alike through development of transportation and recreation facilities; and,

WHEREAS, The City of Hoonah is concerned with maintaining current levels of timber harvest and mineral activity.

NOW THEREFORE BE IT RESOLVED by the City Council of the City of Hoonah that it recommends alternative #8 under the RPA Program Update Planning Process to the United States Forest Service as the most desirable planning program for the Hoonah area.

/s/

Miles N. Murphy, Jr., Mayor

ATTEST:

/s/

Bertina Jack, City Clerk

4 yea's, 2 absent

M-83

IDAHO ASSOCIATION OF Counties
800 WEST STATE — BOX 1623 — BOISE, IDAHO 83701
PHONE: (208) 345-9126

February 29, 1984

To: Forest Service
Intermountain Region
Federal Building
324 25th Street
Ogden, Utah 84401

From: Robert E. Anderson
Chairman, Idaho Association of Counties'
Public Lands Committee, and
Chairman, Caribou County Commission
Soda Springs, Idaho 83276

Subject: Comments on Draft Environmental Impact Statement,
1985-2030 Resources Planning Act.

Backgrounds:

Caribou County is in the heart of the Western Phosphate Fields with four major companies now mining and processing locally. We have extensive public land ownership, Federal Forest Service and Bureau of Land Management, State, Bureau of Indian Affairs, and U.S. Fish and Wildlife.

In addition to my regular Commissioner Activities, I'm also Chairman of the Idaho Association of Counties Public Land Committee; represent Idaho Counties as a board member of the Western Interstate Region of National Association of Counties; and also Chairman of the National Association of Counties Public Lands Steering Committee.

I'm employed as a Mine Foreman for one of the major phosphate production companies in Caribou County and own a small farming operation with grazing permits on the Caribou National Forest.

Representing these interests, I've drafted the following comments on R.P.A. 85, which represent the adopted position of the Idaho Association of Counties' Public Lands Committee.

General Overview:

The Draft Statement (R.P.A. 85) is an excellent statement of alternatives for long term management consideration. It shows extensive consideration for the problems of Public Land use in the future. I feel the R.P.A. Statement deals basically in generalities and goals and not

too much in specific actions, so I'll attempt to respond somewhat in this manner.

My first concern would be in keeping my commitment from Congress and the Public which would allow long term planning to go forward and not be degenerated into Crisis Management regardless of which alternative or combination of alternatives are adopted.

Alternatives which develop long range sustained production of timber, minerals, wildlife and recreation goals should be prime consideration. Research which will provide solid impact on requirements for marketable and nonmarketable resource needs is a must.

Multiple use concepts should be used whenever possible. Wilderness designations allow only limited management choices, limited use of non-market resources, very limited opportunity to use available forest products, and no opportunity to use nonrenewable resources. 39

Alternative Consideration:

In reviewing the alternates as outlines, I find both alternatives six and eight being similar and probably very acceptable; as in each case they prepare for accelerated use of market and nonmarket resources, reflect land restoration and reforestation and put high emphasis on research as a necessary vehicle to reach the outlined goals and long term stability. Our preferred choice is alternative six. Alternative one and five appear to leave little or no provisions to prepare for growth needs.

Alternatives two, three, four, seven and nine all place some imbalance of uses at the expense of others. Alternatives nine and possibly four indicate and promote; (1) over production of resources which might increase dependence on foreign resources in future years, and (2) lack of ability to regenerate the renewable resources at a pace equal to their use.

Specific References:

Reference pages 1-8 under subtitle (Range) statement shows increased demand of 46% for range grazing with alternatives six and eight showing increases of 8 or 9%. Reflecting upon the rapid decrease in Sheep Members in Idaho and availability of grazing allotments plus the high level of Cattle Members which apparently have sufficient grazing land, are these projections good? 40

Reference pages 2-4 ltems (1) and (2) in first paragraph, on grazing fee costs. Before we embark on substantial cost increase we should carefully look at the grazer's ability to absorb these costs and what effect increases might have in putting the producer out of business, placing increased dependence on private lands, increasing meat prices and placing dependence on foreign producers. Acknowledging that grazing fees are a bargain today, they do reflect our nationwide ability to produce a reasonably priced food basket in the world market which directly benefits everyone.

In reviewing (R.P.A. 85), specifically, law enforcement has not been addressed. Cooperative efforts between State and Federal Wildlife Law Enforcement Agencies, County Sheriffs, State Policy, and Forest Service Personnel are very important if we are to control such items as destruction of recreation facilities, erosion caused by off road vehicles, fish and game poaching, growing of marijuana, etc. Management plans should also reflect a commitment to research and funding for noxious weed control and predator control.

Thank you for the opportunity to respond to R.P.A. 85.

Sincerely,

Robert E Anderson

Robert E. Anderson, Chairman
IAC Public Lands Committee

REA/gb

cc: Vaughan Francis, Forest Service Soda Springs, Idaho 83276
Senator Steve Symms, Washington, D.C.
Senator James McClure
Representative Larry Craig
Representative George Hansen
Gerrie Green, NACo Washington, D.C.
IAC President Lionel Koon
IAC Public Lands Committee Members
Chuck Holden, IAC Boise

County of El Dorado

ROBERT E. DORR ..... DISTRICT I
PATRICIA R. LOWE ..... DISTRICT II
W.P. WALKER ..... DISTRICT III
JOSEPH V. FLYNN ..... DISTRICT IV
THOMAS L. STEWART ..... DISTRICT V

DOLORES BREDESON ..... COUNTY CLERK

BOARD OF SUPERVISORS
330 Fair Lane ● Placerville, CA 95667
Telephone (916) 626-2464

April 5, 1984

Mr. Zane G. Smith, Jr.
Regional Forester
Forest Service, USDA
Pacific Southwest Region - RPA
630 Sansome Street
San Francisco, CA 94111

Dear Mr. Smith:

In response to your letter of March 29, 1984, regarding the 1985 RPS Program DEIS, the El Dorado County Board of Supervisors at their regular Board meeting of April 3, 1984, directed that a letter be sent to you advising that this Board is in support of Alternate No. 2 in the National 1985 Resources Planning Act Program Draft Environmental Impact Statement, as Alternate No. 2 provides a high level of employment and returns to counties.

Very truly yours,

PATRICIA R. LOWE, Chairman
Board of Supervisors

DOLORES BREDESON, County Clerk &
ex officio Clerk of the Board

By: _____
Deputy Clerk

PRL:bc

cc: Western Timber Association

MONTEREY COUNTY

THE BOARD OF SUPERVISORS

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P.O. BOX 946
KING CITY, CALIFORNIA 93930

WILLIAM G. PETERS
1200 AGUAJITO ROAD
MONTEREY, CALIFORNIA 93940

April 3, 1984

Zane G. Smith, Jr., Regional Forester
Forest Service, USDA
Pacific Southwest Region - RPA
630 Sansome Street
San Francisco, California 94111

Dear Mr. Smith:

We appreciate the opportunity to comment on the Draft Environmental Impact Statement (DEIS) for the Forest Service's 1985-2030 Resources Planning Act Program (RPA). The Los Padres National Forest comprises a significant portion of Monterey County and a major portion of the Big Sur coast, whose natural amenities are recognized as national treasures. Thus, the planning decisions made by the Forest Service at the national level, for the Pacific Southwest Region, or for the Los Padres National Forest are of vital interest to Monterey County.

Local citizens, private non-profit organizations, the County, and many state agencies have contributed considerable efforts toward the development of land use and resource management plans for the Big Sur coast. Monterey County's Big Sur Coast Land Use Plan (LUP), developed through the State of California's Local Coastal Program, strongly emphasizes the protection of the area's natural amenities - its scenic resources, sensitive vegetative and wildlife habitats, and water resources, while strictly limiting such potentially disruptive activities as intensive recreational development, timber harvesting, mineral extraction, and residential and commercial development. For the Big Sur Coast LUP to be successfully implemented similar values must be reflected in the Forest Service's plans for Los Padres National Forest.

Of the alternatives presented in the DEIS, Alternative 3, which emphasizes non-market resources and amenity values, coincides most closely with the intent of the State's and Monterey County's plans for the Big Sur coast. Alternative 3 would therefore provide the most appropriate policy guidance for management of the portion of Los Padres National Forest within Monterey County.

M-85

It is evident from the DEIS itself, these comments, and probably others from local or state jurisdications that the Forest Service's RPA Program will significantly impact local areas. The Program should therefore be flexible enough to address the complex variety of local or statewide needs and concerns across the country. This need for flexibility brings forth the issue of whether any one or combination of alternatives presented in the DEIS offers appropriate policy guidance for management of all the Forest Service lands across the United States. **10**

Thank you for your consideration of these comments.

Sincerely,

MICHAL C. MOORE, Chairman
Monterey County Board of Supervisors

AES/jla

JOHN B. LAXAGUE
Chairman
MELVIN "Andy" ANDERSON
Alturas
LESLEY CHACE
Alturas
M. W. "Mickey" JONES
Alturas
JOHN L. COULSON
Tulelake

MODOC COUNTY

Board of Supervisors

MAXINE MADISON
County Clerk
and
Clerk of the
BOARD OF SUPERVISORS
Box 131
ALTURAS, CALIFORNIA 96101
(916) 233-2215

April 5, 1984

U.S. Forest Service
Pacific S.W. Region
630 Sansome Street
San Francisco, CA 94111

Dear Sirs:

The Modoc County Board of Supervisors authorized me to advise you of their support of Alternative 2 in the RPA program. It is the Board's understanding that Alternative 2 provides a high level of employment and return to the counties.

Sincerely,

MODOC COUNTY BOARD OF SUPERVISORS

By Maxine Madison
Maxine Madison, Clerk

M-86

COUNTY OF NEVADA

STATE OF CALIFORNIA — BOARD OF SUPERVISORS

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Robert H. Wilder, 2nd District
Karsten Hansen, 3rd District
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Patricia S. Sutton, 5th District

Cathy R. Thompson
Clerk of the Board

950 Maidu Avenue
NEVADA CITY, CALIFORNIA 95959
Phone Area Code 916 - 265 - 1480

April 10, 1984

Zane G. Smith, Jr.
Regional Forester
Forest Service, USDA
630 Sansome Street
San Francisco, California 94111

Dear Forester Smith:

I have looked over the National 1985 RPA Program Draft Environmental Impact Statement.

It seems to me that the recommendations focus too much on production of lumber and do not give enough weight to other benefits the forests produce. My concern are the water-storage capabilities of the forests and the creation of clean, pure water. Those capacities are of utmost importance and interrelate with soil conservation, retention of top soil, and growth of vegetation and animal life.

I consider that these topics are of equal importance with timber production for the future of the forests and ourselves.

Sincerely,

Ilse E. Barnhart

ILSE E. BARNHART
Supervisor, First District

cc: Robert Lancaster
R. Max Peterson

M-87

County Court of Grant County

Courthouse — P.O. Box 234 Phone (503) 575-0059 Canyon City, Oregon 97820

28 February 1984

Kenneth Evans, Supervisor
Malheur National Forest
John Day, Ore 97845

Dear Ken,

Here are my thoughts on the alternatives in the RPA:

It seems likely that the plan as implemented will contain elements of several alternatives. Therefore, I will address specific concerns rather than weigh alternatives against each other.

Of primary importance is to consider the total effect of planning on all resources. Unless there is a specific reason not to, multiple use should be the goal. No one resource or product should be favored to the detriment of others. Within the framework of resource management, watershed should be considered. All aspects of various management practices should be considered: for instance, the negative effects of not logging should be considered as well as negative effects of logging.

The final plan should not depend on a high cost of administration or utilization. Be practical: look at budget constraints in relation to results.

The local economy should be a factor in final choices. There should be realistic values for recreation and fisheries, which tend to be over valued in the effect on the local economy, and consideration given to maintaining a stable community economy.

Finally we need to allow for future choices--mineral exploration, possible water impoundments, innovative forest practices.

Thanks very much
Lorene Allen
County Judge

lane county

March 14, 1984
WP 43436-58-5

Mr. Mike Kerrick, Forest Supervisor
Willamette National Forest
211 East 7th
Eugene, OR 97401

RE: RPA Options

Dear Mr. Kerrick:

The Lane County Board of Commissioners would like to register their opinion regarding proposed RPA alternatives. Lane County Oregon is the size of the State of Connecticut. Within the County we have a major part of two national forests (the Siuslaw and the Willamette). We note that the Willamette National Forest produces more timber than any other national forest in the United States. We further note that Lane County government relies strongly upon national forest receipts and O&C receipts and that many of our residents are employed in the timber industry. It is, therefore, in the best interests of Lane County to have a level of harvest which can be maintained over many years and which does not detrimentally affect other important national forest goals. 10

We are concerned that the range of alternatives offered do not provide the proper mix of timber versus recreation, wilderness, wildlife and fish and water resources. As we noted above, Lane County has had a historical dependence upon the forest product industry. We are now attempting to diversify our economy by attracting high technology and other industries that are interested in a high quality of life location - including recreational opportunities, hunting, fishing, camping, etc. 39

In recent years, the second largest industry in Oregon has been tourism. We are very concerned that the higher proposed levels of harvest will have a detrimental effect upon our tourism industry. The McKenzie River drainage has long been a destination point for fishing enthusiasts from around the world. The North Fork of the Willamette River is renowned for its native species and unparalleled water quality. Both of these rivers and others in Lane County have seen a dramatic increase in rafting, drift boating and guided trips in the last few years. A long-range forest plan provided for buffer strips around these critical water areas. However, we question whether the proposed buffers are adequate, let alone if those buffers are encroached upon by increased harvest programs. 3

LANE COUNTY COURTHOUSE · PUBLIC SERVICE BUILDING · 125 EAST 8TH AVENUE · EUGENE, OREGON 97401

The Oregon coast has long been a major fishery resource for the United States. For many years, our fisheries have been in a rapid decline due to degradation of wild salmon and cutthroat spawning areas. In the Siuslaw forest in western Lane County, siltation from eroded logged hillsides and a rise in water temperature caused by loss of shade are the major fishery problems. These problems have not been as severe in eastern Lane County to date but an increase in the harvest could accelerate the decline in those fisheries. The dramatic decline of these fisheries has totaled in the millions of dollars for our commercial and sport fishing industries, not to mention the loss of recreational opportunities. 3

We are also concerned that currently all of the options shown indicate that all the old growth timber will be liquidated between 1990 and the year 2030. We believe that more old growth timber should be placed into natural study areas. The value of these undisturbed old growth areas for forestry and related research cannot be duplicated with even an unlimited expenditure of federal funds once they are destroyed. 33

Wildlife habitat is also in question in most of these proposed alternatives. Elk and other large wildlife species are dependent upon old growth timber areas for cover. Forage which is created by clearcutting is no longer the critical limiting factor. The critical limiting factor has become cover for a number of these species. The Spotted Owl and other bird species would also be endangered by most of these proposed alternatives.

We would recommend that new alternatives be developed which mix high nonresource with even timber flow over the long term. Areas most appropriate for industrial forest production should be intensively managed. More federal appropriations for reforestation, manual brush control, timber research and other forms of timber management should be sought by the Forest Service. The Forest Service should fully fund programs to meet the other goals of wildlife, fisheries, recreation and water quality. A balanced long-term approach to the management of our National Forests which will enhance the multiple use concept and assure continued diversity of habitats is in the best interests of all the citizens of the United States. 39

Sincerely,

Peter DeFazio, Chair
Lane County Board of Commissioners

PDF:jrl

M-88

WALLOWA COUNTY COURT

State of Oregon

Office of the Judge
Phone:503-426-3586
P.O. Box E

Enterprise, Oregon 97828

February 23, 1984

Mr. Jeff Sirmon, Regional Forester
Regional Office
United States Forest Service
PO Box 3623
Portland, Oregon 97208

Dear Mr. Sirmon:

Under separate cover I am sending the public response the environmental impact statement for 1985-2030 fores. management plan. I am aware that you did not write the plan nor the nine alternative management goals.

As a concerned citizen and as a public official I must comment that this is about the worst waste of time, energy, and money that I have seen for some time. None of the nine alternative plans are acceptable to the majority of the people in Wallowa County.

Some of the basic assumptions under which the plans were drawn are so far out as to be ridiculous. For example, the assumption there will be no inflation from now to the year 2030 and yet personal income will triple. That just cannot happen. 45

The public hearing process whereby a taxi driver in Chicago has as much say over management of the Wallowa-Whitman as does a local, concerned and knowledgeable citizen does not seem right. Since there are about 7,300 people in Wallowa County including children, it is quite obvious that those most affected by management decisions are not likely to have much say about those decisions.

The Wallowa County Court does request that you get as much local input as possible in all management decisions.

Sincerely yours,

S. J. Farris
Wallowa County Judge

SJF:sp

cc: Representative Bob Brogoitti
Senator Mike Thorne
U. S. Representative Bob Smith

M-89

VERNON MARLL
DISTRICT NO. 1
RICHARD WHITE
DISTRICT NO. 2
PRESTON STEUMAN
DISTRICT NO. 3

Columbia County

OFFICE OF
BOARD OF COUNTY COMMISSIONERS

341 E. Main

DAYTON, WASHINGTON 99328

TO: United States Forest Service
FROM: Vernon Marll on behalf Board of Columbia County Commissioners
SUBJECT: Draft Environmental Impact Statement covering 45 years 1985-2030 Resources Planning Act Program (incorporating references to Pacific Northwest Regional RPA Draft EIS)

The following comments were approved at a regular meeting of this Board on April 9, 1984.

Many of our constituents fear that even though local input is officially sought, it is not really desired, wanted or heeded; that often decision makers within the United States Forest Service are merely jumping through legal administrative hoops required by law.

The entire Environmental Impact Statement is incoherent, confusing and incomplete. An example: A portion of the information in the printed text of the draft, Chapters 1 through 4, is out of harmony with information printed in the appendices.

We object to the premise of forest planning that is based on even age management only. The document fails to seriously consider uneven age management. The even age management principle requires that almost the entire Umatilla National Forest be cycled with eventual clearcutting and/or regenerative cutting which is a type of clearcutting. A large portion of the Umatilla National Forest lying within this County is often subject to hot dry summer seasons with almost no rainfall for a period of from sixty up to ninety days resulting in poor or no regrowth in replanted clearcut areas. This together with other adverse conditions has in the past made clearcutting pattern most undesirable in many locations within the Umatilla National Forest. This portion of the mountains has rough and beautiful terrain. Any type of clearcutting, even in alternate sites, scars the natural beauty. We suggest that a pattern of selective cutting could accomplish many of the goals and retain natural characteristics.

With the exception of certain designated areas, the Umatilla National Forest presents a plan to create a road system that would make almost every ridge or draw in the forest accessible for timber harvesting by the year 2000. These roads and cutting practices forever destroy the pristine nature of the area. Such roads would destroy natural hiding cover and protection for deer and elk,

thus making them more accesible to hunters. Even though we are not suggesting a wilderness designation for these smaller unroaded areas, we do suggest that wherever possible that at least small portions of our national forest should be left untouched so that future generations may make management choices of their own. Our constituents regularly object to excessive road building and clearcutting except when necessary for control of diseases.

Although Forest Service officials have argued to the contrary and so stated in the draft EIS, it is still the feeling of local residents that forest practices of the past are directly responsible for reduced stream flow in the local area over prolonged periods of time and that both water quantity and quality will be reduced substantially by the proposed timber cutting activities. The Environmental Impact Statement indicates increased water flow will generally result when existing trees are removed from a specific location. In this area, any increased water flow due to timber harvesting will normally come during seasons when water is not needed for irrigation or fish enhancement. Experience has proven that in general, timber removal has decreased total water flow in direct conflict with the basic premises of the statement. 33

In summary, we, who hold official positions today, are responsible for not only current orderly management but are also responsible for providing a future viable growing forest. The above-mentioned 45 year Draft Environmental Impact Statement should be rejected and planning modified in line with concerns stated.

Vernon Marll

Vernon Marll, County Commissioner

M-90

STATE OF ALABAMA

GOVERNOR'S OFFICE

MONTGOMERY 36130

GEORGE C. WALLACE
GOVERNOR

January 31, 1984

Mr. John E. Alcock
Regional Forester
1720 Peachtree Road, N.W.
Suite 804
Atlanta, Georgia 30367

Dear Mr. Alcock:

We have reviewed your Draft Environmental Impact Statement for the 1985-2030 Resources Planning Act Program and would like to make the following comments and recommendations.

While the planning process used by the USDA Forest Service has resulted in a fairly complex document, the results displayed seem to identify some essential elements that are needed to evaluate the relative merits of the various alternative programs described in the documents. Although data for individual states is not displayed, we compliment you on using information from individual state forest resource plans in formulating some of the alternatives.

We recommend the adoption of Alternative 6 which advocates the implementation of State Forest Resource Plans, National Forest land and resource management plans, and research program plans. This alternative, which was apparently formulated by the aggregation of local plans, should adequately address economic, social, biological and physical needs in the State of Alabama. Alternative 6 furthermore capitalizes on opportunities for expanded production of goods and service, while exercising fiscal responsiblity for the Federal government relative to other alternatives.

We appreciate the opportunity to review the Draft Environmental Impact Statement for the 1985-2030 RPA Program.

Sincerely yours,

George C. Wallace

GCW:sw

STATE OF ALASKA

BILL SHEFFIELD, GOVERNOR

OFFICE OF THE GOVERNOR

OFFICE OF MANAGEMENT AND BUDGET
DIVISION OF GOVERNMENTAL COORDINATION

POUCH AW
JUNEAU, ALASKA 99811
PHONE: (907) 465-3562

April 17, 1984

Mr. John Sandor
Regional Forester
U.S. Department of
Agriculture
-Forest Service
P.O. Box 1628
Juneau, AK 99802

Dear Mr. Sandor:

We appreciate the opportunity to review the Draft Environmental Impact Statement (DEIS) for the 1985-2030 Resources Planning Act (RPA) Program. The State of Alaska recently joined with other members of the Alaska Land Use Council in adopting unanimously a resolution regarding the draft document for the Resources Planning Act Program. That resolution was conveyed to Forest Service Chief Max Peterson in early May. A copy is enclosed for your information.

NATIONAL FOREST SYSTEM PROGRAM

The RPA planning document is extremely general in scope and lacking detailed direction for the Alaska Region of the Forest Service. It has, therefore, been difficult for the concerned State agencies to evaluate the DEIS alternatives with respect to management of the Tongass and Chugach National Forests. Table H.9, Regional Projected Outputs, Activities, and Costs, provides the only information specific to Alaska about the anticipated results of various program alternatives.

We believe that it is essential to emphasize the role of local planning in developing realistic and balanced programs for the federal management of the national forests, the support of State and private forestry programs, and research in Alaska

There is a curious absence of any discussion of the Congressional mandate to the Forest Service to supply 4.5 billion board feet of timber per decade to dependent industry in Southeast Alaska. Table H.9 indicates that 0.5 billion board feet of commercial timber is the targeted offering for the Alaska Region. The Alaska National Interest Lands Conservation Act (ANILCA)-mandated Tongass timber supply of an average of 450 million (or 0.45 billion) board feet per year, plus 16.9 million (or 0.0169

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billion) board feet of commercial timber from the Chugach National Forest (as recently recommended by your agency in finalizing the Chugach Forest Plan), yields a total of 466.9 million board feet (or 0.4669 billion board feet). The difference between this total, and the RPA target amount leaves 33.1 million board feet not accounted for. While this may be the result of rounding up to the nearest 1/10 billion board feet, we suggest that this significant discrepancy be clearly explained in a footnote at the bottom of Table H.9, or corrected to reflect actual planned Forest Service timber offerings for the two national forests.

If, in fact, the Forest Service is proposing to raise the currently planned timber supply offerings in the Alaska Region to 500 million board feet per year, then we believe that such a target should be derived only after the public and State agencies have had an opportunity to evaluate thoroughly and comment on the Forest Service rationale for that volume. With the ANILCA Section 706(b) report due to Congress in 1985, and the Chugach Forest Plan public comment period recently closed, any such proposal to increase timber supply levels from the national forests in Alaska is premature.

Also absent from the RPA document is any discussion of the Tongass Timber Supply Fund or loan programs for national forest timber purchasers. We believe that this document should clearly identify the special concern for, and attention to, Alaska's national forests which Congress addressed in the Alaska National Interest Lands Conservation Act of 1980.

The State of Alaska reiterates its advocacy of Forest Service emphasis on local input and endorses the development of Forest Service plans through extensive public involvement processes. To the extent that such plans are responsive to local concerns and meet the needs of Alaska's citizens, the State of Alaska supports their implementation. If Alternative 6 is the vehicle best suited to implement these plans then the State of Alaska can conceptually endorse your selection of this alternative.

It appears, however, that the projected outputs and implied funding levels in Alternative 3 for trail construction and maintenance and recreation management and facility construction are more appropriate in Alaska. Increased emphasis on recreational facilities and access will enhance public use and enjoyment of the Tongass and Chugach National Forests, and the State's fish and wildlife resources which inhabit them.

The other projected outputs for the national forest system program component in Alternative 6, subject to clarification of targeted timber supplies as discussed earlier in this letter, appear to be generally consistent with adopted national forest land management plans in Alaska.

As a final point to date, the State has selected 351,000 acres of its 400,000-acre national forest entitlement pursuant to Section 6(a) of the Alaska Statehood Act. As some of these selections have not yet been approved, and the remaining balance has yet to be utilized, the State will look closely at future land classification proposals which might reduce State land selection options.

STATE AND PRIVATE FORESTRY PROGRAM

Alternative 6 is described in the text of the RPA document as being the preferred program of states on a national basis. The State of Alaska has previously commented on the declining funding for State and Private Forestry programs nation-wide. The primary objective of this component is to help states develop forestry programs which could stand on their own. The Cooperative Forest Management Act was the vehicle which launched every state forestry organization in the nation into the field of providing professional and technical assistance to private forest landowners. The recent transfer of millions of acres of federal land to State and native corporation ownership, the increasing assumption by the State of fire suppression responsibilities, the creation of a separate Division of Forestry and new State forests totaling nearly two million acres have all come at a time when Forest Service funding for State and Private Forestry in Alaska has dwindled. Funding in 1982 of $564,000 had shrunk to less than $300,000 in 1984. With no funding ahticipated in 1985, it is difficult to compare RPA alternatives which are all substantially above the reality of appropriated funds. Any one of the RPA alternates if funded and implemented, would be an improvement over current funding.

RESEARCH PROGRAM

Alternatives 6 and 8 provide the highest level of research funding. We endorse continued research efforts in Alaska, but at the level contemplated in Alternative 6 or 8 rather than at the current level of funding of approximately $4.2 million in FY 1984.

PAGE SPECIFIC COMMENTS

Page 2-91, Table 2.39: Region 10 should be included in the "Black-tailed Deer" and "Resident Trout" categories

Page 2-92, Table 2.40: We are pleased to see that Sitka black-tailed deer are acknowledged as a species with special habitat needs. We question, however, the evaluation that 100 percent of the 1985 level of mature/over-mature forest habitat will be retained by the year 2000 under alternatives 3 and 6. Given current economic constraints and the mandated timber availability level on the Tongass, we believe all alternatives will result in

a reduction. Given that Sitka black-tailed deer are primarily in Region 10, the index would be unaffected by other regions.

Thank you for this opportunity to review and comment on the DEIS for the 1985-2030 Resources Planning Act Program.

Sincerely,

Robert L. Grogan
Associate Director

Enclosure

cc: Commissioner Wunnicke, DNR, Juneau
Commissioner Collinsworth, DFG, Juneau
Commissioner Neve', DEC, Juneau
Lisa Parker, ALUC, Anchorage
Dee Frankfourth, DNR, Anchorage
John Sturgeon, DNR, Anchorage
Bill Leitch, DEC, Juneau
John Clark, DFG, Juneau
Rick Reed, DFG, Juneau

OFFICE OF THE GOVERNOR
INDIANAPOLIS, INDIANA 46204-2797

May 2, 1984

ROBERT D. ORR
GOVERNOR

Mr. Jerry Snow
Coordintor, Regional Planning Act
Eastern Forest Region
USDA Forest Service
310 West Wisconsin Avenue
Milwaukee, Wisconsin 53203

Dear Mr. Snow:

Please know that I have reviewed the 1985 Regional Planning Act Draft Environmental Impact Statement and have prepared the following comments.

Generally I am very impressed with both the quality and quantity of work that went into this effort. The RPA process represents a model of public participation in the governing process.

From our perspective, alternative six is the most appealing of the nine alternatives. This alternative is based on the goals mutually agreed on by literally thousands of citizens from all walks of life. Indiana's contribution to the alternative was based on the goals established in our statewide forest management plan. This plan was developed over several years and relfects the wishes and desires of the many individuals and diverse interests that participated in its development. I am confident that our plan represents a logical, well-balanced approach to meet the future needs identified by our state's residents.

Alternative six is a compilation of programs established by similar planning processes in other states and plans developed for individual national forests. These plans were not developed in Washington nor were they dominated by special interests or professional groups. Rather they are an expression of the grass root desires of the citizens of this country. It is difficult to imagine a process more consistent with our country's democratic philosophy. Further it is difficult to imagine how greater citizen involvement could have been utilitized in the development of a comprehensive nationwide management program of this complexity.

Alternative six is favored not just because it most reflects Indiana's needs, but because it is the alternative that most represents the expressed wishes of the citizens who participate in similar planning efforts nationwide.

Sincerely,

ROBERT D. ORR
Governor

RDO/JRW/mr

M-93

EXECUTIVE OFFICE
STATE OF MISSOURI
P.O. BOX 720
JEFFERSON CITY
65102

CHRISTOPHER S. BOND
GOVERNOR

March 9, 1984

Eastern Region
U. S. Department of Agriculture
Forest Service
Henry S. Reuss Federal Plaza
310 W. Wisconsin Avenue
Milwaukee, Wisconsin 53203

Gentlemen:

Thank you for providing my office with a copy of the draft Environmental Impact Statement for the 1985-2030 Resources Planning Act Program. As requested, the document has been reviewed by key staff members. At this time, the State of Missouri has no specific comments to offer.

If I or my staff can be of any further assistance, please feel free to contact us.

Sincerely,

Kit Bond

GOVERNOR

aks:cn

State of Montana
Office of the Governor
Helena, Montana 59620

April 9, 1984

TED SCHWINDEN
GOVERNOR

Mr. Tom Coston
Regional Forester
Region 1, U.S. Forest Service
P.O. Box 7669, Federal Building
Missoula, MT 59807

Dear Mr. Coston:

Enclosed are the State of Montana's comments regarding the Draft Environmental Impact Statement, 1985-2030 Resources Planning Act Program. I appreciate the opportunity to review and comment on this important program.

In my 1982 comments on the Resources Planning Act Program, I indicated that the State of Montana is serious about actively participating in forest planning, management, and conservation. We are concerned that RPA objectives remain goals against which individual forest plans can be tested, and not firm targets against which forest plans will be measured and modified. Forest planning should be a "from the bottom-up" process in which individual forests assess their capabilities. Planning must not be a "top-down" process whereby decision-makers in Washington make broad decisions adversely influencing the character of our forests and their valuable resources.

Scarce federal dollars must be carefully allocated to foster social, economic, and environmental stability in our communities. We must guard against the unwise prioritization of some resources at the expense of others if the long-term stability, multiple use, and sustained yield that we seek from our forests is to be accomplished.

I look forward to learning the direction that will be taken once all the public comments and proposals have been considered.

Sincerely,

Ted Schwinden

TED SCHWINDEN
Governor

Enclosure

State of Montana
Office of the Governor
Helena, Montana 59620

TED SCHWINDEN
GOVERNOR

MONTANA COMMENTS ON THE DRAFT
ENVIRONMENTAL IMPACT STATEMENT, 1985-2030
RESOURCES PLANNING ACT PROGRAM

It is difficult to provide comment on national goals, since they lack detailed consideration of the local concerns associated with activities on a particular forest or tract of land. Nevertheless, national goals tend to dictate specific management policies at the individual forest level and thus shape the final forest management plans.

Much of the concern over forest management in Montana stems from the effects of commodity extraction on wildlife, water quality, wilderness and non-commodities that the forest produces. The draft has quantified values in each of the alternatives. Nevertheless, there remain concerns as to the accuracy of these values and whether non-commodities are given equitable consideration compared to more easily quantifiable commodity values. There is also concern that many timber sales on Montana forests are actually costing the American taxpayers dollars (deficit sales), while at the same time diminishing other important resource values.

It is significant to note that of the 481 million acres of forest land in this country, 278 million acres are in nonindustrial, private ownership, 69 million acres are owned by the forest industry and 134 million acres are in public ownership, of which only 87 million acres (18%) are national forest lands. This underscores the opportunity for supplying an increasing amount the nation's timber needs from private lands and for re-evaluating the dominance of timber harvest on public lands.

Timber

The timber products industry is critically important to Montana and Montanans. Your timber program for each forest in Montana will continue to be carefully evaluated and commented on by this administration.

Based on the statistics presented in the RPA, the forest and range lands under nonfederal ownership represent the greatest opportunity to meet increasing national demands for timber, range, water, and recreation in the future. Nonfederal ownership accounts for approximately 52% of the nation's forest and range lands, 50% of the nation's softwood inventory, 49% of the standing softwood sawtimber, and 72% of the commercial forest land base. Given this amount of nonfederal ownership of our nation's most valuable renewable resources, the prudent management of these nonfederal lands is clearly in the national interest. Federal funding levels for the State and Private Forestry Program must be increased above current levels. To meet future demand for timber products, technical assistance must be provided to the nonindustrial private landowners, who collectively own 58% of the nation's commercial forest land base.

There is a need to improve utilization of available timber in response to the projection of increased demands. More intensive management of the lands in the timber base is good resource management and makes long-term economic sense. Simply increasing the rate of harvest on marginal forests in western states will not sustain our timber industry over the long-term. It will, however, impact other resources which need not be compromised with prudent timber management on our best sites.

The RPA concludes that the demand for timber is increasing faster than the supply. If this is true, stimulating foreign and domestic markets is a conflicting federal activity. Market promotion would appear to be an inappropriate role for an agency whose fundamental and historica' responsibility is one of resource protection and management.

Continued growth of the timber industry will require new technology, better land management practices, and increased demand for wood products. Other goals, range, recreation, water, etc. have been given cost effectiveness consideration in the RPA. The goal of development of timber resources however, does not consider the cost effectiveness of the industry or the consequences of its development on other resources. Timber management practices must be cost effective if the timber industry is to be a viable long-term part of our economy. Intensifying timber management on the current base should reduce the number of subsidized "hard money" roads and make timber harvest more cost effective.

The output levels and funding levels for Alternative 7 are incorrect. In regions 1 and 2, Alternative 7 was arbitrarily equated to the current level (Alternative 1), without any supportive analysis. With such a serious defect, Alternative 7 (as now displayed) cannot be considered for implementation.

Alternative 6 calls for the implementation of the preferred program levels developed under the forest planning process. A national program, based on the professional judgments of the field level resource managers and founded on the actual on-the-ground situation on each forest, seems appropriate. The emphasis on amenities in Alternative 3 is also appropriate in Montana where recreation, wilderness, and fish and wildlife values play an increasingly important role in the economy.

A compromise between Alternative 3 and Alternative 6 which would produce timber supplies higher than Alternative 3 while targeting environmentally sound timber management into forest stands on an economic basis is preferable. Multiple use and sustained yield concepts must guide those decisions. State and public input must be reflected in that guidance.

For any alternative to be satisfactorily implemented, sufficient funds must be available to support a responsible monitoring program. A careful monitoring program is the only means available to collect the data necessary for an accurate evaluation of the program.

Range

Range is a very important use of our national forest lands. Increasing rangeland productivity on these public lands is not only appropriate but desirable. The Forest Service is encouraged to investigate methods of integrating forage management with other land management strategies,

especially with timber harvest. Care must be taken, however, to prevent overgrazing, riparian habitat destruction, and other resource conflicts. The level of grazing improvement associated with Alternative 6 can be accomplished without sacrificing wildlife grazing use, if careful and coordinated planning and implementation is followed.

It should be recognized that large populations of the wildlife and game animals are sustained on private lands. Since public and private lands are used by both public and private animals, there needs to be a coordinated management plan which ensures that domestic grazing and wildlife goals, as stated in the RPA, are attained and sustained. Coordinated planning is the key to a successful range program.

Recreation

Tourism is a major industry in Montana with gross receipts of approximately $600 million annually. The future of the tourism industry is very promising and is directly related to recreation based activities. Given Montana's present and future reliance on tourism, we are concerned that the maintenance and development of National Forest recreation sites, such as campgrounds and picnic areas, has not kept pace with the increasing tourism demand. Existing facilities have become increasingly crowded and suffer from lack of adequate maintenance.

It is disturbing to note that the RPA has "adjusted downward" by 37.5% the estimated net values for various forms of forest recreation developed by economists. The adjustment appears arbitrary and may favor those alternatives with commodity resources which conflict with quality recreation opportunities.

The goal concerning recreational opportunities appears to prioritize developed recreational opportunities. The demand for developed recreational facilities is increasing, but the public is becoming more aware of and interested in undeveloped recreational opportunities as well. The more than doubling of wilderness use over the last 20 years is clear evidence of that interest.

Alternatives 1 and 5, which have the lowest capital investment expenditure for roads, also have the lowest capital investment expenditure for recreational facility maintenance. None of the alternatives portray a low level of expenditure for roading and a high level of expenditure for recreational development. The latter should be considered, along with modifications to encourage the private sector to provide more recreational opportunities, and to provide increased support for state programs.

Wilderness

Blanket decisions on wilderness areas cannot and should not be made. Case-by-case, area-by-area analysis must provide the basis for management and allocation. State and public input in these areas are vital to a successful wilderness program.

Wildlife and Fish

There is an emphasis in the RPA on habitat manipulation to "help recover threatened and endangered species and increase the productivity of native game and nongame species ..." Although habitats can be improved to benefit wildlife, security may be more limiting than food supply. In this case, roadless or minimum level management may be more appropriate than using timber harvest to "improve" the habitat. We support the objective of further integrating fish and wildlife objectives in the management of other forest and rangeland renewable resources. This appears to be addressed most appropriately in Alternative 3. Prior USFS budget allocations to these resources have not reflected their importance in Montana, a situation in need of correction. Region One of the USFS currently does not have a fish and wildlife program. Like other resources, the key to a successful program is balance based on a cost/benefit analysis. Careful, coordinated planning with state and private interests to determine costs and benefits to the public must be initiated and maintained for each and every forest area.

Mineral and Energy

We fully concur with the need for research to ensure that disturbed sites are adequately reclaimed. However, streamlining permitting and leasing processes, and improving access should be considered only if they can be accomplished without significantly compromising other important forest values. Alternative 3 or 6 appears most acceptable.

Water

A national goal of increasing water yield is not clearly beneficial. Increased water yield may be associated with decreased water quality. If increased timber harvest increases peak flows, it is also likely to decrease minimum flows. Thus, increased timber harvest can both increase flooding and decrease water supply to downstream water users, such as irrigators, during critical low flow periods. A goal that is more clearly in the national interest is to prevent water quality degradation, and to conserve the nation's waters for the most beneficial uses that exist. Watershed values of standing forests were at the core of the creation of public forests.

International Forestry

We concur that assisting other nations in improving management of their forests is a worthy goal. Research efforts as outlined in this category are clearly beneficial.

Protection and Support

We support implementation of Integrated Pest Management and encourage the Forest Service to coordinate weed control efforts with other federal agencies, state agencies and county weed boards during the planning process. Fire protection, research and management, and integrated pest management programs are important elements of forest management. The program outlined in Alternatives 6 and 8 appear to best serve the nation's needs.

M-95

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Research

Research should be adequately funded to support the attainment of the goals outlined in both National Forest and State Forest resource planning. Research Alternative 6 best achieves that goal, The increased budgets called for would permit a well balanced program that addresses both market and nonmarket needs. Close coordination with the nation's forestry schools should also be actively pursued.

Roading

Roading and accessing new areas for timber harvest is often in direct conflict with many of the non-commodity forest outputs, including wilderness, fish, wildlife and recreation. Methods of increasing timber outputs that do not require new roading cause fewer resource conflicts. Intensive timber managment programs, reforestation (on both state and national forests) and research to improve utilization and longevity of wood products would increase the national supply of timber, while at the same time minimizing conflicts with other resources.

Forest Plans

It was anticipated that the 1985 RPA EIS would be improved over the 1980 program because of the information it would gain from forest plans. Significant delays in forest planning, however, have generally limited the availability of this necessary information. Few forest plans were completed in time to provide input into the RPA. Critical information regarding physical timberland suitability, relationships between timber and other resources, and costs remain unavailable. With so little accurate information from the forests, the RPA conclusions must be regarded as tentative.

Social Effects

Community stability is often used as one of the criteria to judge alternative management policies. Many communities have become dependent on timber in areas where timber has been historically overharvested or where most sales are deficit in nature. To artificially create an economy that cannot be sustained without federal subsidies and an ever increasing land base represents a failure of both forest planning and multiple-use management. The stability of a community whose economy is timber-dependent must be based on sustained yield, departures from this concept are unacceptable.

JOHN H. SUNUNU
GOVERNOR

STATE OF NEW HAMPSHIRE
OFFICE OF THE GOVERNOR
STATE HOUSE - CONCORD, NEW HAMPSHIRE 03301

April 4, 1984

Regional Forester
Eastern Region
The Henry S. Reuss Federal Plaza
310 W. Wisconsin Avenue
Milwaukee, Wisconsin 53203

Dear Regional Forester:

I am pleased to submit to you a response to the Draft Environmental Impact Statement 1985-2030, prepared by the U.S. Forest Service under the auspices of the Resources Planning Act. As you may know, staff of several New Hampshire agencies have actively participated in White Mountain National Forest and State forest planning. The 1982 planning activities of the U.S. Forest Service for the WMNF involved professionals from the Department of Resources and Economic Development, Fish and Game Department, Water Supply and Pollution Control Commission and Office of State Planning in extensive meetings and reviews of forest plans and alternatives. I am proud of their contribution, and the contribution of many other concerned citizens from our state and surrounding New England states.

Alternative Six, developed from National Forest System and State Forest Resources plans, seems to reflect a moderate and thoroughly reasonable approach to resources programs through the planning period. Several factors would argue for favoring this alternative - 1) State Forest Resources Plans and National Forest Systems Plans made heavy use of public involvement and have, therefore, already been selected as adequately serving a broad constituency; 2) the alternative would be an aggregate of local data and local conditions, which again should result in a practical overall program; 3) National Forest Systems Plans and State Forest Resources Plans represent countless hours of professional analysis and tremendous financial investment. One would question the justification for a major departure from their direction.

Additionally, I note that both alternatives 6 and 8 allocate high levels of support for research, including research on the effects on forest ecosystems of atmospheric deposition. As Governor, I have advocated and worked hard, in concert with the other New England governors, to achieve a solution to the problem of acid rain. While research is no substitute for action at this time to control acid rain, it will help to document the extent of damage and long-term implications for resource recovery from acid rain.

Most alternatives, including number six, allocate a gradually increasing share of the total Forest Service budget to State and Private Forestry. This is entirely in accord with our belief that government should play a role in tapping the potential of non-industrial forest lands.

Alternative 6 also allows for moderate expansion of the wilderness areas on national forests. You are doubtless familiar with the legislation to designate an additional 77,000 acres of wilderness in the WMNF currently pending before Congress. This bill reflects many hours of hard work and compromise by many people. It provides permanent protection for three significant areas and flexibility for designating future wilderness areas as need and demand dictate. Alternative 6 appears to accommodate this type of approach and provides similar flexibility in designating future areas.

Technical comments relative to the Draft Environmental Impact Statement have been submitted to the Area Director, Northeastern Area, State and Private Forestry by Theodore Natti, Director, Division of Forests and Lands, State of New Hampshire.

Thank you for the opportunity to respond to this document. Should you have questions, please direct them to Mr. Natti.

Sincerely,

John H. Sununu
Governor

JHS:ds/jyb

M-97

ALLEN I. OLSON
GOVERNOR

State of North Dakota

EXECUTIVE OFFICE
BISMARCK

May 10, 1984

Mr. Tom Coston
Regional Forester
U.S. Forest Service
Federal Building
P.O. Box 7669
Missoula, Montana 59807

Dear Mr. Coston:

North Dakota state natural resource agencies have made specific comments on the Forest Service Resources Planning Act, 1985-2030, Draft Environmental Impact Statement. Please consider those comments in your review and final EIS.

The State of North Dakota is generally satisfied with the present management of resources in the Little Missouri Grasslands. The Forest Service under its current management program has done a credible job of balancing traditional uses of the grasslands such as grazing, with the relatively recent development of oil and gas reserves. The Forest Service has also taken action to protect wildlife and aesthetic values of the area.

Given the importance of oil and gas development in America's desire for energy independence, we support the continued development of these resources in the Little Missouri Grasslands. At the same time, however, we are not unmindful of the economic, social and environmental impact this development has on the surrounding communities and rural areas. The impact statement addresses these concerns by recognizing that the rapid growth that accompanies oil and gas development can overwhelm community resources and planning for orderly development. Federal land laws attempt to mitigate these adverse impacts by providing that a percentage of the mineral revenue received on federal lands be returned to the states or local communities where the development occurs.

The Mineral Leasing Act of 1920 provides that 50 percent of the mineral revenue from public domain lands be returned to the state

> "to be used by such state and its subdivisions, as the legislature of the state may direct giving priority to those subdivisions of the state socially or economically impacted by development of minerals leased under this chapter, for (i) planning, (ii) construction and maintenance of public facilities, and (iii) provision of public service."

The vast majority of federal onshore oil and gas production in the United States is produced on public domain lands. In North Dakota, however, the majority of federal oil and gas development occurs on lands acquired under the Bankhead Jones Act. That Act provides that 25 percent of the revenues be returned to the local counties where the minerals were produced to be used for schools or roads.

In 1982, approximately $55 million in oil and gas revenues were generated from oil and gas production on federal lands in North Dakota. Approximately $40 million of this total was from Bankhead Jones lands while only $14 million came from public domain lands. This means that the local counties received approximately $10 million from the Bankhead Jones lands and the State of North Dakota approximately $7 million from public domain lands. Altogether 31.5 percent of the total oil and gas revenues from federal lands in North Dakota were returned to the State of North Dakota or to the counties.

The enclosed chart provides a comparison of mineral revenues generated on federal public domain lands and acquired lands in those states having significant production and the amount of money returned to each state. As you can readily ascertain from the chart, North Dakota receives the smallest percentage of revenue from oil and gas production of any state. This is attributable to the fact that we have significantly more production on Bankhead Jones lands than on public domain lands. In 1982, if all the production in North Dakota had been on public domain lands, North Dakota would have received an additional $10 million. As compared to other states with oil and gas production on federal lands, North Dakota is in effect being penalized because we have such a high percentage of Bankhead Jones land. We received proportionately significantly less money with which to mitigate the adverse impacts resulting from oil and gas development on federal land. Fairness dictates that Bankhead Jones lands should not be treated any differently than public domain lands.

Because of the inequity associated with the allocation formula of the Bankhead Jones law, I would be interested in knowing if the Administration has considered the possibility of legislation which would bring Bankhead Jones mineral revenue distribution in line with those set out in the Mineral Leasing Act of 1920. The inequity could be removed by returning an additional 25 percent of the Bankhead Jones mineral revenues to the state.

Kindest regards.

Sincerely,

ALLEN I. OLSON

Enclosure

M-98

VICTOR ATIYEH
GOVERNOR

OFFICE OF THE GOVERNOR
STATE CAPITOL
SALEM, OREGON 97310

April 5, 1984

Jeff M. Sirmon, Regional Forester
USDA Forest Service
P.O. Box 3623
Portland, OR 97208

The Governor, who is leading a month-long trade mission to the Middle East, has asked that I respond, on his behalf, to the Draft Environmental Impact Statement 1985-2030, Resource Planning Act Program and the Assessment Supplement Documents.

Enclosed are comments of Oregon's natural resource agencies who analyzed these documents.

Concerns were expressed by two agencies on lack of adequate funding on two major activities planned on national forests - fish and wildlife habitat management and silvicultural investments.

The Governor strongly supports full funding for these planned activities to maintain and enhance fish and wildlife habitat and to support sustained timber harvests in the state. Without this full funding, plans cannot be accomplished for these important forest activities.

These responses are being sent to you to meet your April 9 deadline. The Governor may wish to provide additional comments upon his return.

Sincerely,

Gerry Thompson
Executive Assistant
to the Governor

Enclosures

GT/JGF:gu

M-99

STATE OF UTAH

SCOTT M. MATHESON
GOVERNOR

OFFICE OF THE GOVERNOR
SALT LAKE CITY
84114

April 6, 1984

Tom Coston, Regional Forester
USDA Forest Service
P.O. Box 7669
Missoula, Montana 59807

Dear Mr. Coston:

The state of Utah has reviewed the Forest Service Draft Environmental Impact Statement for the Resources Planning Act program for the period 1985 through 2030. The RPA program provides the state with a unique opportunity to scrutinize and comment on broad management goals and directions that will drive the entire Forest Service program. Also, the effort to articulate national goals is commendable and serves as an encouragement to states and federal agencies to identify long term goals with public assistance. At the same time, focus on the comprehensive and programatic tends to be at the expense of detail. The state of Utah's review was complicated by the lack of information as to how implementation of any of the alternatives would affect Utah. The state's selection of a preferred alternative was primarily driven by this lack of certainty.

Alternative 6 is the state's preferred alternative for very practical reasons, as well as philosophical reasons. Practically, Alternative 6 would implement plans which the state has participated in developing. Much more is known about the impacts to the state from implementation of these plans than implementation of any of the other alternatives. Additionally, Alternative 6 would not disrupt the process of completing the various forest plans. As the Forest Service attempts to synchronize its top-down/ bottoms-up, nation/regional/forest planning process, there should be as little disruption as possible. I am committed to the importance and necessity of planning and have attempted to move the state of Utah in that direction. Nevertheless, at some point it is essential to ask whether scarce tax dollars are appropriately spent in endless planning and at what point the public will begin to discount the importance of planning.

Philosophically, Alternative 6 represents decentralized planning. Acknowledging that the National Forests are a "national" resource that should

be managed in the best interest of the public, I believe that generally best management of the public resource comes from those who work with the forest on a daily basis. Forest level planning in Utah has worked to arrive at the necessary balance between demand for forest resources and forest capacities. For example, intense grazing and timbering along the Wasatch Front has been eliminated due to concerns about watershed protection. Implementation of Alternative 9 on the Wasatch-Cache National Forest could have serious implications for community water supply. Utah's own State Forest Resource Plan has also been developed with an attempt to strike a balance between resources and demands.

For the reasons stated above, Alternative 6 is the state's preferred alternative, with the exception that Alternative 6 should be amended to place more emphasis on funding of wildlife programs.

Following are comments concerning specific segments of the EIS.

Page 1-3, paragraph 2, line 8. Fish and wildlife values are referred to here as simply amenities of National Forests. The impression is given that these resource values, along with recreation and wilderness, are secondary values and that commercial products are the primary emphasis of multiple use management. It is important to remember that fish and wildlife are as much a product of a National Forest as is timber or any other marketable value. They are just as important to the people of this nation, and they deserve consideration in planning on a par with other resource values.

Page 1-4, paragraph 1. Much of the recreational use of National Forests is wildlife oriented. Projected management for recreation seemingly fails to recognize that fact. An opportunity for improved recreation that should be acknowledged here would be improving conditions for fish and wildlife in a way that would facilitate increased recreational use of National Forests for wildlife oriented recreation.

Page 1-16, Minerals and Energy Opportunity Area. A greater commitment to mitigation of adverse impacts on wildlife, and even enhancement of conditions for wildlife, as part of mineral development should represent an opportunity for achieving the mineral and energy goal on National Forests.

The state agrees that streamlining leasing and permitting processes is generally a very good idea. However, more detail on what exact measures the USFS plans to take, under the aspices of streamlining, would be appreciated.

Research to assure rehabilitation of disturbed sites should be applied research.

Page 1-16, Water Opportunity Area. The state was pleased to note that water yield improvements were recognized as a national goal and that increases in water yield are projected for each alternative, although not specifically mentioned in the text for alternatives 4,5,6 and 7.

Page 1-20, Issues. This discussion of program issues falls short of indicating how these key issues will be satisfied.

Page 2-1, paragraph 1. There is a projected increase in user-days with a concurrent 5-10 % decrease in carrying capacity. The rationale for the projected increased use should be explained.

Page 2-3, Legislative Proposals. Even though eliminated, both of the legislative proposals discussed have merit; however, there should be a clear distinction between user fees levied on uses for commercial purposes and those for recreational pursuits. For example, individuals or entities that derive their livelihood from the National Forest should expect to pay a much greater user fee than those who simply recreate on National Forests. The Forest Service should not expect to recover the same percentage of administrative costs from recreationists as they do from commercial ventures. It should be remembered that recreationists do not derive their income from the National Forest. Through taxes they subsidize those who do.

Page 2-4, Alternatives Considered In Detail. In the detailed discussions of alternatives beginning on page 2-4, the narrative accounts of estimated fish and wildlife user-days are consistently, on every alternative, higher than values shown in the tables summarizing National Forest Service system program outputs, activities, and costs. There is no explanation of this discrepancy; yet it is a substantial one. For example, on page 2-6, paragraph 5, the last sentence, it states that total wildlife use reported in all opportunity areas would rise from 39.4 million user-days in 1986 to 40.3 million in 2030. Yet in Table 2.1 on page 2-7, projected fish and wildlife use is 25 million user-days in 1986, 1990, and 2030. This inconsistency should be explained. See also page 2-40, Table 2.27, where wildife user-day values differ substantially from use values cited in the text.

Page 2-6, paragraph 5. It is pointed out here that current wildlife habitat diversity would be maintained; yet carrying capacity is predicted to decline approximately 5 percent. Not knowing the details of the relationship, this seems contradictory. If carrying capacity declines, then certain wildlife populations would decline. A misleading impression is given here that wildlife will benefit from actions that will reduce carrying capacity. On the other hand, since the predicted decline in capacity is only 5 percent, it is probably impossible to predict the impact of that amount of change. In fact, we have to wonder if it is possible to predict a 5 percent change in carrying capacity.

Page 2-6, paragraph 6. The state applauds the "increased emphasis on protection of surface resources and mitigation of adverse environmental impacts" under alternatives 1,3,4,5,6,7, and 8. The protection of surface resources is not mentioned in Alternative 9, but could have been. Alternative 2 stresses timely processing of applications but does not mention protection of surface resources. It is possible to refine and

improve procedures but <u>also</u> protect resources. It is not necessary to ignore surface protection in any of the alternatives.

Page 2-9, Table 2.3. It seems there is a great disparity between funding of timber research and other opportunity areas even for this alternative.

Page 2-10, paragraph 2. There is a great deal of similarity between Alternatives 2 and 9 which generates confusion at seemingly no great benefit to the process. For example, Alternative 2 states that the alternative is intended to, "...emphasize achievement of high output levels for timber, range, minerals, and other market resources." The description of Alternative 9 states that it is intended to "...achieve both the highest timber output by relaxing management constraints and high output levels of other market resources." While there are differences in expenditures and outputs projected, they are generally relatively slight differences.

Page 2-18. It is questionable whether high output levels can be achieved for both market and non-market resources as proposed under Alternative 4. It seems that to a substantial degree the two are mutually exclusive. As noted in Forest Service's Guide for Responding to RPA "85 Program DEIS, "Remember that the goals interact with each other and cannot meet everyone's goals at the same time. <u>Selecting some goals at a high level precludes others at the same level</u>" (Emphasis added).

Page 2-28, paragraph 2. Increases in watershed research associated with most of the alternatives is generally desirable. There are many kinds and forms of research, however, and the state prefers to support research on a project-by-project basis rather than support a non-specific budget for this purpose. Since research under Alternative 6 emphasizes water yield and quality, in this regard, Alternative 6 is again the state's preferred alternative.

Page 2-19, paragraph 4. Given the increased timber harvest, increased grazing, increased construction of trails, and an 80% increase in human use, is the projected increase in wildlife habitat carrying capacity possible? This seems to be a contradictory conclusion. Additional explanation is needed to demonstrate how such an increase in carrying capacity can occur.

Page 2-36, paragraph 1, and Table 2.24. Again it seems contradictory to expect an increase in fish and wildlife user-days given a 20-40% decline in wildlife habitat carrying capacity. Given the law of diminishing returns, fish and wildlife user-days would also decline. It is probably true that demand for <u>non-consumptive</u> use for wildlife related recreation could increase in some areas simply as a result of population increase; use that could be accommodated with a decline in wildlife habitat and hence numbers and diversity of species (with perhaps a decline in experience quality). However, given that degree of loss of carrying capacity, <u>consumptive</u> use of wildlife would have to decline substantially.

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The failure to distinguish between consumptive and non-consumptive wildlife use is a major deficiency of the report generally.

Page 2-66, paragraph 1. It is stated here that the water quality objective for Alternative 3 is higher than other alternatives. Yet in figure 2.15 on the same page, the number of acres maintained in satisfactory water condition under Alternative 3 is relatively low. This seems inconsistent with the stated objective. An explanation is in order.

Page 2-68, State and Private Forestry. It is stated that "it is anticipated that state forestry agency activities in mined land reclamation will be funded primarily by the Office of Surface Mining (OSM) and/or the reclamation regulatory agency" (in Utah the Division of Oil, Gas and Mining [DOGM]). Does state and private forestry refer to State Lands and Forestry? If so, State Lands and Forestry does not receive funds from OSM and/or a regulatory agency for mined land reclamation. If the reference is not to State Lands and Forestry, as it is now, coal mines located on USFS land are under the jurisdiction of the USFS and subject to its regulations. This includes road design and sediment control. The DOGM has been advised by the USFS that they do not have jurisdiction in these areas. The State is unable to fund the USFS for reclamation activities. It is still under question if OSM will. This is a question that should be carefully rewritten to properly reflect the situation.

Page 3-1, Chapter 3: Affected Environment. The description of the wildlife and fishery resources in Chapter 3 leaves a great deal to be desired. That description focuses on the market value of fish and wildlife and essentially ignores the much greater non-market value. It also ignores the much greater economic value that is not returned directly to the treasury. There is no effort to place both quantitative and qualitative wildlife values in perspective. For example, at the very least the report should point out the National Forests sustain thousands of species of vertebrate wildlife that are extremely important to millions of Americans. The opportunity to enjoy wildlife both consumptively and non-consumptively is an integral part of the quality of life as perceived by millions of Americans. There is a great contrast between the description of the wildife and fish resource and the timber resource.

Page 4-19, paragraph 1. Increased timber harvest would not reduce Rocky Mountain Elk cover requirements, but would reduce cover available to meet those requirements.

Page 4-39, Relationship Between Short-term Use and Long-term Productivity. This discussion describes short-term use and long-term productivity, but it fails to clearly show the relationship between the two.

Page F-7, Appendix F. Benefits for increased water yield in Region 2 (Rocky Mountain Region) were valued at $45.50/acre-foot, but only at $12.00/acre foot for Region 4 (Intermountain Region). Utah, as well as other Colorado River Basin states, have been pressing the Forest Service for several

years to adopt more realistic values for increased water supply in the Colorado River Basin.

Page I-13, Land Rehabilitation, Appendix I. It should be noted that the USFS may be responsible for coordinating leases and special use permits related to mining; but, the regulation of this industry, regardless of land ownership/management status, is the responsibility of the OSM or respective state regulatory agency.

Page I-15, Minerals. The research of mineral site reclamation described on page I-15 raises the following questions:

1. The research of disturbed site pollution is vaguely defined as "technology to alleviate pollution from disturbed sites." More specific information related to discipline--hydrologic, engineering, soils, etc., should be made available.

2. Applied research should be emphasized in site rehabilitation, rather than redefining methods.

3. What type of information will be sought from mine operations on hazardous mine wastes? Coordination with other pertinent state or federal agencies should be pursued during this, as well as other, research efforts. In-lieu of coordination, interested agencies should at least be informed of research efforts.

Thank you for the opportunity to review this document. The state looks forward to an opportunity to become involved in the local planning processes that will be necessary to implement the selected program at the local level.

Sincerely,

Governor

SMM:jc

M-102

State of Washington

JOHN SPELLMAN, Governor

OFFICE OF THE GOVERNOR

April 6, 1984

Mr. Thomas E. Hamilton, Director
Resources Program and Assessment
Forest Service
United States Department of Agriculture
P.O. Box 2417
Washington, D.C. 20013

Dear Mr. Hamilton:

The state of Washington appreciates the opportunity to review and comment upon the Draft Environmental Impact Statement (EIS) for the 1985 Renewable Resources Planning Act (RPA) Program. The public input you will receive on this program, including our comments, will be valuable in helping you evaluate the nine national alternative programs from which a Forest Service Recommended Program will be developed.

Attached are specific comments from the six state natural resources agencies evaluating your program. We believe the RPA process is a valuable one, and our critical comments are offered in an attempt to strengthen the RPA planning process. While I support the planning efforts leading to the development of this document, I must direct my comments toward the need for revising the alternatives for Region 6 (Oregon and Washington). Specifically, the alternatives being considered need to reflect the current status of proposed wilderness in the State. As you know, our Congressional delegation has reached a consensus on the amount of new wilderness to be included in the Washington Wilderness Bill (1.02 million acres). With the addition of these areas added to the wilderness system in Washington State this year, the RPA alternatives for Washington will have to be adjusted. I understand that the United States Forest Service Pacific Northwest Region is in the process of finalizing boundaries for the additional wilderness areas agreed to by the delegation.

Some of the agency comment letters indicate that specific alternatives from the EIS best meet those agencies' objectives. We believe the RPA process is most likely to be successful and meet state objectives if additional alternatives are developed that may combine desirable features from more than one of the draft alternatives. Several program elements are particularly important to the state of Washington:

Legislative Building • Olympia, Washington 98504 • (206) 753-6780 • (Scan) 234-6780

1. We are vitally interested in protecting soil, water quality, fish, and wildlife on National Forest lands, and state and private forest lands. These resources are important to both our economy and way of life. Forest service programs should emphasize increased protection as well as enhancement, and meet established state goals for these significant resources. Success of protection efforts should be the key consideration in estimating the environmental effects of the program.

2. Increasing constraints on timber production on Federal lands are likely in the future in order to meet other resource objectives. At the same time, adequate timber supplies from National Forest lands and other lands will continue to be of great concern to the states' forest industry and communities dependent on that industry. Therefore, there is a great need for increased productivity of state and private, including private nonindustrial, forest lands. We also believe that forest resource planning at the local level, based on site-specific information and local public involvement, is likely to reflect the best balancing of all resource values. The RPA Program should therefore include a strong and increasing commitment to all phases of state and private forestry assistance based on locally developed state forestry planning.

3. We are also very concerned with an apparent weakening with the Forest Service's basic commitment to multi-disciplined research. Such research is an essential feature of future efforts to increase productivity while ensuring proper protection for forest resources. We believe the RPA Program should indicate strong financial support for the Forest Service Research Program.

The state of Washington will support full Federal funding and cooperative efforts in implementing an RPA Program which emphasizes these elements.

With best wishes,

Sincerely,

John Spellman
Governor

Attachment

cc: State Natural Resource Agency Directors
Brian Boyle, Commissioner of Public Lands, DNR
Jeff M. Sirmon, Regional Forester, Region 6, USFS

WYOMING
EXECUTIVE DEPARTMENT
CHEYENNE

ED HERSCHLER
GOVERNOR

April 5, 1984

Mr. James Torrence
Regional Forester, R-2
Forest Service, U.S.D.A.
11177 W. 8th Avenue, Box 25127
Lakewood, CO 80225

Mr. Stanley Tixier
Regional Forester, R-4
Forest Service, U.S.D.A.
507 25th Street
Ogden, UT 84401

Gentlemen:

The draft environmental impact statement for the 1985 Resources Planning Act Program has been circulated for state agency review. Copies of agency comments are enclosed for your consideration and use.

Considering the varying and unique circumstances that exist on and surrounding Wyoming's National Forests, it is extremely difficult to choose one of the nine alternative national program directions as being "best" for Wyoming. I would hope that the selected alternative will give the two Regions and the individual Forests enough flexibility to match the respective market and non-market outputs to local conditions and desires. I think that you will agree with me that what we don't need is more centralized planning or Washington, D.C. based target assignments. The forest planning process must work from the bottom up and not from the top down if it is to be effective and accepted.

The selected program should be a mixture of several components of the identified alternatives in order to best match varying regional conditions. Obviously, increased water yield is a more important factor in Regions 2 and 4 than in the more humid regions of the country. Likewise, Wyoming's significant recreation - tourism industry is much more dependent on forest recreation and fish and wildlife opportunities than are many other state's

recreation - tourism industries. The substantial regional income and employment effects associated with fish, wildlife, recreation and water deserve full recognition throughout all levels of the RPA planning process. This is not to say that the more traditional "commodity" outputs of timber, oil and gas, and minerals must be de-emphasized. Rather, an appropriate balance between non-market and market outputs, consistent with local and regional desires, must be developed.

A major problem that we have with the economic modeling used in the RPA analysis is the focus on direct cash payments for goods and services as the only "returns to the U.S. Treasury." This focus ignores the substantial amount of tax revenue accurring to federal, state and local treasuries from income, sales, excise, inheritance and other forms of taxes associated with forest resource generated economic activity. Further, it leads to an undue emphasis on recreation user fees and grazing fees as ways to increase "direct" returns to the U.S. Treasury. This emphasis ignores the significant contribution that these forest uses make in both direct non-fee and indirect returns to the Treasury, as well their importance in local, regional and national economies in general. I hope that final analysis will take a more accurate and realistic viewpoint on these matters.

Thank you for the opportunity to review and comment on this document. Please keep me informed of the progress in this effort.

Yours sincerely,

Ed Herschler

EH:pcl

Enclosures

KETCHIKAN GATEWAY BOROUGH
344 FRONT STREET
KETCHIKAN, ALASKA 99901

March 9, 1984

RPA Coordinator
Alaska Region
USDA Forest Service
Post Office Box 1628
Juneau, AK 99802

Dear RPA Coordinator,

The Ketchikan Gateway Borough Planning Department has reviewed the Draft Environmental Impact Statement for the nationwide 1985-2030 Resources Planning Act Program. Adopted community policies contained in the Ketchikan District Coastal Management Program and Ketchikan Gateway Borough Comprehensive Plan provided the basis for our assessment of the nine described RPA alternatives. Alternative 4 "High All Resources" most closely approximates the community development and growth management goals of the Ketchikan Gateway Borough. Alternative 4 emphasizes recreational use, timber production, wilderness protection and minerals development through a balanced, active and long range program of protection and enhancement. Other alternatives emphasized goals less desirable to Southeast Alaska such as range grazing, increased water yields, reduced timber production, and short-term imbalanced exploitation of resources. 39

Thank you for this opportunity to review the Draft. I'm sure the Forest Service will receive additional Ketchikan area public comment when the hearing phase commences.

Yours truly,

Peter Dragovich

Peter Dragovich
Associate Planner

sz/13/001

M-104

PARKS AND RECREATION DEPARTMENT
4701 East Washington Street
Phoenix, Arizona 85034
(602) 262-3711

April 3, 1984

Forest Service, USDA
Office of Information
517 Gold Avenue, SW
Albuquerque, NM 87102

Dear Sirs:

Our preference of the alternatives offered in the RPA '85 Program DEIS is alternative 3. Admittedly alternative 3 is to some small degree a preservationists preference.

Despite this the improved benefit in terms of watershed management in recreational use of our lands more than compensates for the loss in timber yield and grazing revenues.

Recreation is ranked by many as the the nation's second most important industry. It is felt that at this time a greater emphasis should be placed on our nation's leisure time needs. This is particularly true in view of the drastic reduction in the land and water conservation program administered by the Department of Interior. 43

Thank you for the opportunity to express our views in this most important matter.

Sincerely,

Howard K. Gillmore

Howard Gillmore
Superintendent of Recreation
and Parks Services

G:m

KERN COUNTY PLANNING DEPARTMENT

RANDALL L. ABBOTT
PLANNING DIRECTOR

1103 GOLDEN STATE AVENUE
BAKERSFIELD, CALIFORNIA 93301-2499
TELEPHONE (805) 861-2615

March 27, 1984

File: Agency, US Government
Dept of Agriculture
USFS

Regional Forester
Forest Service, USDA
Pacific Southwest Region-RPA
630 Sansome St.
San Francisco, CA 94111

Re: Draft EIS for 1985-2030 Resources
Planning Act Program

Gentlemen:

We appreciate the opportunity to review the above noted project, and have the following comments:

pp.1-15 WILDLIFE & FISH OPPORTUNITY AREA

It appears that more area is to be surveyed for USFS management than now is controlled by forest boundaries. This is good, but needs to be clearly stated.

The first step in ecological work seems by-passed; you must know what occurs in an area before you can adequately assess relationships and hope to apply multiple-use management policies. Thus, a primary "opportunity" exists for thorough development of resource-base inventories where they do not exist, and for convergence of differing systems of biotic inventories that have resulted from past efforts. **40**

pp.1-16 WATER OPPORTUNITY AREA

Development of reforestation techniques toward more standard "agricultural" applications, including aerial and ground - applied herbicides, requires more long term monitoring of water quality dynamics in upper elevations than do similar techniques in lowlands. Due to recognition of areas where clear air means "prevention of significant degredation" (PSD) and resultant long-term atmospheric drift, such monitoring is federally required in most forested settings. This should be recognized as an "opportunity" to monitor and more closely manage environmental change, and stated here as such. **24** **3** **2**

pp.1-18 PROTECTION AND SUPPORT OPPORTUNITY AREA should also include:

a. Inventory vegetation, flora and fauna to produce a resource-base upon which future management can judge actions, coordinate existing systems and develop research opportunities with appropriate universities and institutes. **40**

b. Establish a sensitivity rating for habitats, to balance current production-capability ratings aimed at higher yields. Maintain corridors of biological integrity wherever possible between inter-related biotas. **25**

We hope these comments will be of value in further action to be taken on this program.

Very truly yours,

RANDALL L. ABBOTT
Planning Director

By: Fred Simon
Principal Planner

tj

M-105

BEAVERHEAD COUNTY PLANNING BOARD

P.O. BOX 351
DILLON, MONTANA 59725
406/683-4862

April 6, 1984

USDA Forest Service Supervisor
Northern Region
Federal Building
P.O. Box 7669
Missoula, Montana 59807

Dear Sir:

The Resource Committee of the Beaverhead County Planning Board has reviewed the Draft Environmental Impact Statement for the Resources Planning Act Program and wishes to submit the following comments.

Two of the objectives of the Beaverhead County Comprehensive Plan are:

To enhance the agricultural, forest products, and mining segments of the economy by protecting the resources which support these activities including the continuity of multiple use of public lands.

To discourage all wilderness areas in Beaverhead County.

It is with these objectives in mind that we submit our comments.

We wish first to comment specifically on the alternatives as they affect Region 1, using the Table H-1.

We support Alternative 2 (High Market) as the preferred alternative because we believe this alternative will best maintain a healthy area economy. Two-thirds of the land in this county is owned by federal and state governments. Therefore any restrictions on the use of these lands for the agricultural, mining, and timber industries will severely affect the survival of these industries and the area economy. Conversely, increasing the production of resources, as proposed in Alternative 2, would have a very beneficial effect on these industries, particularly at a time when the economy in Montana is having difficulties, dependent as it is on agriculture, timber and mining. We believe that you should plan to enhance the economy rather than depress it. In order to minimize environmental impact, if any, of increased production of market resources, we believe that stricter management rules and supervision should be used. We feel very strongly that the multiple use concept should be maintained in the National Forests. 10

In addition, Alternative 2 contains the least amount of wilderness acreage which we believe is in the best interests of the economy of this area. We oppose locking up 15

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natural resources on the Forest through further wilderness designation because it is a waste of the natural resources on which our county and many others are dependent economically. In addition, in a county like ours, where only one-third of the land provides a tax base, additional wilderness designation can put an intolerable burden on county taxpayers. In addition we believe that proper range management, control of noxious weeds and timber diseases, and water storage development will not be possible under wilderness designation.

We feel that Alternative 9 has merit also, but it is a more costly alternative and perhaps proposes too much timber production to be practical for the productive capacity and the demand.

Alternative 6 could possibly be acceptable to us even with lower grazing, timber, and mineral production than Alternative 2. However, it proposes more wilderness acreage than Alternative 2 which is unacceptable to us for reasons stated above.

The rest of the alternatives do not meet our criteria as set out by our Comprehensive Plan.

We realize that these proposals are made on a nationwide basis for all the National Forests. We still believe that Alternative 2 offers the most desirable alternative for the county as a whole because of its emphasis on high output for market resources which can only benefit the nation's economy. As stated above, environmental concerns could be met by stricter management rules and supervision.

In answer to your question about any other information you should consider in managing the National Forests we submit the following recommendations:

1. Control of noxious weeds is ignored in your proposals. Noxious weeds are certainly an extremely serious prob- in this area and may be in other areas of the country. Omission of any recognition of the problem or plans for control in your plan should be remedied. Great efforts are being made by private landowners to control weeds, an effort that is wasted if the National Forests do not make the same effort.

2. Timber disease and pest control are not sufficiently addressed in the plan. Certainly this should be a priority even to maintain current timber production as well as any of the timber proposals in your alternatives.

3. The possibility of future needed water storage development on Forest Service land is not addressed. We believe it should be, particularly in the west.

4. Range management plans should be addressed more thoroughly and more emphasis placed upon them. Renewable rangeland resources in the National Forests and the value of forest grazing to our agricultural economy should be recognized. 12

5. Social and economic impact on the local community of mineral and energy development should be addressed in the plan since the Forest Service is leasing such a large amount of its land for mineral development. 10

We would appreciate your giving consideration to our comments.

Yours truly,

HEADWATERS COUNTY PLANNING BOARD

Holley Smith

Holley Smith, Chairman

M-107

JACKSON COUNTY OREGON

COUNTY COURTHOUSE · MEDFORD, OREGON 97501

DEPARTMENT OF PLANNING
Kerry L. Lay, Director
(503) 776-7554

April 6, 1984

Robert Devlin, Forest Supervisor
Rogue River National Forest
U.S.D.A., Forest Service
P. O. Box 520
Medford, OR 97501

RE: RPA 1985 Program DEIS

Dear Mr. Devlin:

Thank you for the opportunity to comment on the Draft Environmental Impact Statement (DEIS) and related materials. My staff has reviewed the various proposals and alternatives contained in those documents for consistency with Jackson County's Comprehensive Plan, which has been acknowledged by the Oregon Land Conservation and Development Commission.

Our comments on the draft EIS alternatives are predicated on goals and related policies adopted by the county which are contained in its Comprehensive Plan Forest Lands, Environmental Quality, and Natural and Historic Resources Elements. The county will prefer alternatives in the DEIS which emphasize those goals and policies stated in the plan. For your information, I will briefly describe the related plan provisions upon which our comments on the nine alternatives are based.

Environmental Quality Element:

POLICY 3 - CONSERVE THE WATER RESOURCES OF JACKSON COUNTY AND PROTECT, MANAGE AND IMPROVE THE QUALITY OF SURFACE AND GROUND WATERS, FOR THE PROPAGATION OF WILDLIFE AND FOR DOMESTIC, AGRICULTURAL, INDUSTRIAL, RECREATIONAL AND OTHER BENEFICIAL USES.

POLICY 4 - THE COUNTY SHALL, TO THE EXTENT OF ITS LEGAL AUTHORITY, PROVIDE FOR THE PROTECTION OF MUNICIPAL WATER SHEDS FROM USES WHICH COULD IMPACT THE QUALITY OF THE WATER AND INCREASE EROSION.

Forest Lands Element:

GOAL - TO CONSERVE FOREST LANDS FOR FOREST USES AND ENSURE A CONTINUED YIELD OF FOREST PRODUCTS.

POLICY 1 - THE COUNTY SHALL CONSERVE ITS FOREST RESOURCES, REDUCE CONFLICTS BETWEEN FOREST AND NONFOREST USES AND ENCOURAGE THE SUSTAINED YIELD OF FOREST PRODUCTS.

POLICY 2 - ACTIVITIES ON FOREST LAND SHOULD BE CARRIED OUT TO THE BENEFIT OF FOREST PRODUCTION, DOMESTIC LIVESTOCK GRAZING, WATERSHED PROTECTION AND AQUIFER RECHARGE MAINTENANCE, WILDLIFE AND FISHERIES HABITAT, OPEN SPACE AND SCENIC RESOURCES, RECREATION AND CONTROLLED MINING.

POLICY 4 - THE COUNTY SHALL PROMOTE THE ESTABLISHMENT OF A COORDINATED WOODLAND ASSISTANCE PROGRAM IN ORDER TO IMPROVE THE COUNTY'S FUTURE SAW TIMBER SUPPLY THROUGH INCREASED PRODUCTIVITY ON NONINDUSTRY FOREST LANDS.

POLICY 5 - JACKSON COUNTY SHOULD ENCOURAGE A LAND EXCHANGE PROGRAM AMONG PRIVATE INTERESTS AND PUBLIC AGENCIES WHERE CONSOLIDATION OF FOREST OWNERSHIPS CAN BE SHOWN TO RESULT IN MORE EFFICIENT MANAGEMENT, REDUCE CONFLICTS BETWEEN FOREST AND NONFOREST USES AND CONSERVATION FOREST RESOURCES.

(Please note that the definition of forest lands and forest uses which are utilized by the county are basically identical with the definitions of the same contained in the Statewide Planning Goal 4, Forest Lands.)

Natural and Historic Resources Element:

GOAL - TO PRESERVE AND CONSERVE VALUED OPEN SPACE LANDS; PROTECT AND MAINTAIN EXISTING, AND ESTABLISH NEW HISTORIC, SCENIC AND WILDLIFE AREAS AND ENSURE THE WISE UTILIZATION OF NATURAL RESOURCES.

POLICY 1 - THE COUNTY SHALL WORK WITH THE NATURE CONSERVANCY, THE NATURAL HERITAGE ADVISORY COUNCIL AND OTHER AFFECTED AGENCIES AND ORGANIZATIONS IN ENSURING THAT NATURAL AREAS ARE APPROPRIATELY IDENTIFIED AND PRESERVED.

POLICY 2 - THE COUNTY SHALL IDENTIFY EVALUATE AND ENCOURAGE PRESERVATION THROUGH PROPER MANAGEMENT, THE SIGNIFICANT NATURAL SCENIC LANDSCAPE RESOURCES OF THE COUNTY.

POLICY 3 - IN CONJUNCTION WITH THE OREGON DEPARTMENT OF FISH AND WILDLIFE AND OTHER AFFECTED AGENCIES, THE COUNTY SHALL PROVIDE FOR THE PROTECTION OF A PRODUCTIVE AND HEALTHY FISH AND WILDLIFE COMMUNITY AND HABITAT, AND SHALL PROTECT THREATENED OR ENDANGERED SPECIES.

POLICY 4 - THE COUNTY SHALL PROMOTE THE DESIGNATION OF APPROPRIATE AREAS FOR WILDERNESS RECREATION TRAILS AND SCENIC WATERWAYS.

POLICY 5 - THE COUNTY SHALL ENCOURAGE THE PROPER MANAGEMENT OF WATER AREAS, WETLANDS, WATERSHEDS AND GROUNDWATER RESOURCES IN ORDER TO FACILITATE THEIR CONSERVATION, PRODUCTIVITY AND WISE UTILIZATION.

POLICY 7 - THE COUNTY SHALL ACTIVELY PROMOTE THE IDENTIFICATION AND PRESERVATION OF HISTORIC RESOURCES.

POLICY 9 - JACKSON COUNTY SHALL ACTIVELY PARTICIPATE IN ANY ACTIVITY WHICH MIGHT RESULT IN THE UPPER ROGUE RIVER BEING CLASSIFIED AS A WILD AND SCENIC RIVER BY THE FEDERAL OR STATE GOVERNMENT. THE COUNTY SHALL ALSO APPLY THE PROVISIONS OF GOAL 5 AND OAR 660-16-000 DURING THE EVALUATION.

Comment: As one can see from a review of the definition of forest lands and forest uses shared by the county and the state and the above goal and plan policies, the county would tend to support those alternatives which will result in multiple use management of the forest, emphasizing watershed protection and enhancement greater emphasis on reforestation within the context of sustained yield management, increased incentives to nonindustrial forest land owners to manage their land for forest use, particularly timber production, and finally an active land exchange program should be encouraged in order to better enable public agencies to manage forest lands under their jurisdiction. Finally, emphasis is also given to open space, scenic, wildlife, wilderness, historic and natural area resources. 39

I will now highlight our perspective on the strengths and weaknesses of each of the proposed alternatives in the DEIS, and will make some general observations not specifically contained in any of the alternatives. I should first note that emphasis is given to those national alternatives which most directly meet the needs of the citizens of Jackson County, e.g. the county's perspective on the alternatives is based on the impact of the alternative on the Rogue River National Forest, and to a certain extent the region which contains other forests within Jackson County.

Alternative 1 (Current Level and Mix of Forest Service Program Outputs):

It would appear that alternative one has limited impact on the Rogue National Forest and the region with the exception of the decline of old growth. It does not appear to respond well to national goals, however. The decline in old growth may be of some concern because under Statewide Planning Goal 5 certain old growth areas are also considered to be natural areas which may be deserving of some type of protection. In this matter, Jackson County has deferred to the Forest Service or the BLM for old growth areas on federal lands. Federal agencies should coordinate their planning for old growth management with the Natural Heritage Advisory Council of Oregon and the Land Conservation Development Commission. In conclusion, the major weakness of alternative one is that it exhibits a low response to national goals. Its strength both regionally and locally within the Rogue River National Forest is that it appears to be a more balanced alternative in terms of its emphasis on market and nonmarket resources. 36 37

Alternative 2 (High Market):

This alternative emphasizes a high output of timber, range, minerals and other market resources and as such has a high response to the so called commodity goals in the Pacific Northwest Region and the Rogue River National Forest. It appears that the alternative is not well balanced because it trades off environmental factors for economic factors. It would also appear that the harvesting would be accomplished at an accelerated departure rate from sustained yield. The county's comprehensive plan policy does not support deviation from sustained yield or achievement of increased outputs of commodities at the expense of environmental factors.

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Alternative 3 (High Nonmarket):

This alternative emphasizes a high output of water, wildlife and fish, recreation, wilderness and other nonmarket resources with production of timber, range, minerals and energy, and water at so called economically efficient levels consistent with the nonmarket emphasis. Power outputs of nonmarket resources is apparently achieved at the expense of economic factors and as such does not achieve the balance desired by the county's comprehensive plan. It should be noted, however, that the impacts of alternative three on the Rogue River National Forest are the same apparently as alternative one and alternative six. In that sense, it appears, for the Rogue River National Forest, to be reasonably balanced between market and nonmarket resources emphasis. Alternative three should not be chosen because of its adverse affect on economic factors in the Pacific Northwest Region. The forest products industry in Oregon and Washington has been depressed for several years and this alternative will only contribute to that trend continuing.

10

Alternative 4 (High All Resources):

This alternative responds to all resource demands at a moderate to high level at the national level. The basic weakness in this alternative is its impact on the Pacific Northwest Region's ability to achieve balance between economic and environmental factors. At the Rogue River Forest level, imbalance represents a downtrend on all environmental factors except for developed recreation which is considered to be a revenue generator. This alternative also represents a departure from sustained yield management.

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Alternative 5 (Reduced):

This alternative would emphasize reduced federal emphasis on so called renewable resource management and would encourage state and local governments and the private sector to increase market and nonmarket outputs. The major weakness of this alternative is that it has a low response to all national goals and presumes that state and local government

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and the private sector will be able to carry a greater share of the responsibility for multiple use forest management. According to this alternative, economic factors would definitely have a downturn. Receipts to the treasury would be reduced and as a result Jackson County would not receive as much revenue from the federal government. Considering the budgetary problems occuring throughout this region at the state and local level, and given the present economic condition of the timber industry itself, the premise upon which this alternative is based appears unrealistic. In short, Jackson County would not favor adoption of this alternative.

Alternative 6 (Implement Plan):

This alternative would implement the national forest plan, state forest plans and research plans. This particular alternative appears to be the most desirable for a variety of reasons. It would appear to have a generally positive impact on all economic factors at the national and regional level, and it would have a positive or neutral impact on most environmental factors. The exception is old growth.

According to the material provided by the Rogue River National Forest, this alternative would have a similar impact on the Rogue River National Forest as would the current outputs (1) and the high nonmarket (3) alternatives. The chief advantage of alternative six is that it would achieve an upward trend in economic factors throughout the region which would have benefit to the economy of Oregon and Southern Oregon. It also would appear that the alternative is fairly well balanced and would not achieve the economic improvement at the expense of environmental factors as would the high market type alternatives.

It appears to have a long-term benefit to Jackson County in terms of potential federal receipts received, although in the short run it has a lower level of receipts based on returns to the treasury. It also appears to be a lower cost alternative relative to two, four, six, seven, eight, and nine, and achieves an increased output of wildlife and fish user days over the planning period. It achieves some stability in water quality improvement as well. Its only apparent weaknesses lie in the low level of wildlife habitat management and improvement (spotted owl and big game), and in its preservation of old growth. However, it should be noted that spotted owl habitat is in old growth. As such, provision for a specified number of spotted owls will preserve a certain amount of old growth stands. In any event, this alternative has a less adverse impact on old growth than alternatives two, four, seven, eight, and nine.

In conclusion, alternative six is most consistent with Jackson County's Comprehensive Plan.

Alternative 7 (High Present Net Value):

This alternative achieves a largely positive affect on economic and environmental factors at the national level at the expense of environmental factors in Region 6 and the Rogue River National Forest. This is largely due to increased timber harvesting that would result in the northwest. This alternative represents a departure from sustained yield management, and does not exhibit the balance of environmental and economic factors exhibited in other alternatives, particularly number six. 20

Alternative 8 (1980 RPA Program Direction):

This alternative is apparently the "no action alternative" which continues the 1980 approved RPA program without the built-in budget constraints of alternative one. Regionally and locally, all economic factors would show an uptrend, but a downtrend would result in all environmental factors. This alternative also represents a departure from sustained yield management and does not exhibit the balance desired by the county, as stated in its comprehensive plan. 20

Alternative 9 (High Productivity):

This alternative would achieve the highest timber and other market resources output. It represents the other end of the continuum from a high nonmarket emphasis. It would achieve a definite upward trend in economic factors at the expense of environmental factors. It does not represent a balance between environmental and economic factors at the national, regional or national forest level.

Conclusion: It would appear that alternative six represents the best alternative presented in terms of its ability to achieve national goals, including increases in economic factors, with the least adverse affects on environmental factors at the regional and local forest level. I think it is also desirable to select an alternative that represents the implementation of plans that have been the subject of many years of work and development.

Alternative six is more consistent with the county's comprehensive plan than the other eight for the reasons noted above. However, I do believe that this alternative ought to be further analyzed in terms of what it might look like under a sustained yield/even-flow management concept, as opposed to a departure approach to timber management. Use of the minimum number of spotted owl habitat should be reevaluated. If that approach does not work, then I would suggest that an alternative ten be developed which is based on alternative six levels of output with a greater emphasis on wildlife management, and most importantly, sustained yield timber 20

management. Alternative six as modified by these suggestions would best reflect the concerns and policies addressed by Jackson County's acknowledged Comprehensive Plan.

Should you have any questions about these comments or desire further information, please contact me or Steve Erickson of my staff at 776-7554.

Sincerely,

J. Robert Capp
Planning Coordinator

JRC:SE:cf

cc: Board of Commissioners
Planning Commission
Kerry Lay, Planning Director

CITY OF SALEM OREGON
City Hall / 555 Liberty St.
Zip Code 97301
Public Works Department

March 5, 1984

Forest Service, USDA
P. O. Boc 3623
Portland, OR 97208

Subject: 1985 RPA Program

To Whom It May Concern:

The City of Salem draws its drinking water from the North Santiam River slightly east of the City of Stayton. A small portion of the North Santiam River Watershed is located in the Mt. Hood National Forest. The majority (nearly 100 percent) of the North Santiam River Watershed is located in the Willamette National Forest.

With the exception of chlorination, our potable water supply is not chemically treated. It is, however, processed through a sand filtration gallery prior to chlorination. Obviously, water that is high in turbidity cannot be diverted for use by the City of Salem. (Water high in turbidity quickly clogs our filtration beds.) Turbidity is usually caused by erosion, which is generally directly related to upstream development. Any treatment technique to rid water of high turbidity would be extremely expensive for Salem ratepayers.

We would expect that, in selecting the alternative for the RPA program, you will continue to keep the quality of Salem's drinking water supply in the forefront of your considerations.

It has been our pleasure to participate in the planning process for the RPA, and we would ask that your agency notify us of the outcome, as well as any further developments that would interest us.

Sincerely,

David M. Siegel, AICP
Senior Planner

MW:dkh

cc: Ronald J. Merry, Director of Public Works
Rosalind A. Daniels, Assistant Director of Public Works
David Wiley, Management Analyst

M-111

CENTRAL SHENANDOAH PLANNING DISTRICT COMMISSION

119 W. Frederick Street STAUNTON, VIRGINIA 24401 Post Office Box 1337 Phone: (703) 885-5174

DAVID W. RUNDGREN
Executive Director

March 21, 1984
Ref. #3-42

Regional Forester
1720 Peachtree Road, NW
Suite 804
Atlanta, Georgia 30367

Dear Sirs:

At their March 19, 1984 meeting, the Central Shenandoah Planning District Commission reviewed the Draft Environmental Impact Statement of the Resources Planning Act Program. The Commission voted to endorse an alternative that would have as its result a sustained yield of market and non-market forest products without the degradation of the forest resources.

In addition, the Commission would like to see the final Impact Statement consider the effects of the selected alternative analyzed in greater depth as to the environmental impacts of communities growth and development which may be a direct result. Specifically, what demands will be created to support the selected alternative in terms of land, labor, and capital and will those required investments be such that the impacts will be stable and not major "boom-bust" cycles. 34 10

Thank you for your consideration of the Commission's concerns.

Sincerely,

David W. Rundgren
Executive Director

DWR:rw

Buena Vista Harrisonburg Lexington Staunton Waynesboro
Augusta Bath Highland Rockbridge Rockingham

ALABAMA FORESTRY COMMISSION

513 Madison Avenue
Montgomery, Alabama 36130-0601

April 6, 1984

C. W. MOODY
STATE FORESTER
CHARLES A. PIGG
ASST. STATE FORESTER

Mr. John E. Alcock
Regional Forester
1720 Peachtree Road, N.W.
Suite 804
Atlanta, GA 30367

Dear Mr. Alcock:

I have reviewed your Draft Environmental Impact Statement for the 1985 - 2030 Resources Planning Act Program and would like to make the following comments and recommendations.

The RPA process has been evolving and improving in some key areas since the initial effort in 1975. One improvement is where the Program now clearly identifies an alternative which was formulated from input received from individual states. I would encourage the Forest Service to continue the improvement process; I believe a stronger correlation between State and Private Forestry programs and resource outputs is one possible area of improvement. 31

I would urge the adoption of Alternative 6 which advocates the implementation of State Forest Resource Plans, National Forest land and resource management plans, and research program plans. This alternative will allow the various state forestry organizations to enhance forest resource outputs in the most efficient manner possible by capitalizing on the best opportunities at the local level.

Sincerely,

C.W. Moody
State Forester

ALASKA LAND USE COUNCIL

P.O. Box 120
Anchorage, Alaska 99510
(907) 272-3422

State Co-Chairman
Bill Sheffield
Governor

Federal Co-Chairman
Vernon R. Wiggins

April 3, 1984

R. Max Peterson
Chief, Forest Service
U.S. Department of Agriculture
P. O. Box 2417
Washington, DC 20013

Dear Mr. Peterson:

By unanimous action, the Alaska Land Use Council, on April 2, 1984, recommended the attached comments be forwarded to you on the Draft Environmental Impact Statement 1985 Resources Planning Act Program. The comments were prepared by the Council's Staff Committee after several briefings and meetings with the USDA Forest Service in Alaska. We hope our comments will be helpful in preparing your final recommended program on the 1985 Resources Planning Act Program.

The State of Alaska will be submitting additional comments under separate cover.

Robert L. Grogan
State Cochairman Designee

Vernon R. Wiggins
Federal Cochairman

C.M. #007/84

Alaska Land Use Council

1689 "C" Street, Suite 100
P.O. Box 100120
Anchorage, Alaska 99510-0120
(907) 272-3422 & 271-5485 (FTS)

M E M O R A N D U M

DATE: February 28, 1984

TO: Alaska Land Use Council

FROM: Staff Committee

SUBJECT: Resources Planning Act

The Staff Committee has reviewed the USDA, Forest Service draft Resources Planning Act program for the period 1985-2030. The draft RPA program now being considered was developed in response to the Forest and Rangeland Renewable Resources Planning Act (RPA).

The draft RPA program presents nine alternatives divided into three program areas of the Forest Service: National Forest System, State and Private Forestry, and Research. These alternatives have been designed to give the maximum "decision space" to policy makers in the selection of the final recommended program. The alternatives range from one substantially below the current level and mix of Forest Service activities to several which are substantially higher for some or all resources.

The RPA program is a national planning process. On a regional basis, activity levels are provided for key resources such as timber, recreation and wildlife for each alternative, but with little in the way of regional level analysis of impacts or the trade-offs required to carry out the program. This is not a criticism of the RPA program, but rather an observation of a necessary characteristic of a broad scale national planning process.

In Alaska, the Alaska Land Use Council has been intimately involved in the Forest Service land management planning process for both the Tongass and the Chugach National Forest. Currently a sub-group of the Land Use Advisors Committee is reviewing the draft forest plan for the Chugach National Forest and is expected to be making a number of recommendations to the Council. Another sub-group of the Land Use Advisors is working closely with the Forest Service

on evaluating the existing land management plan for the Tongass National Forest. Both of these efforts are consistent with the Council policy to provide advice to agencies in preparing and carrying out land management plans.

It is the view of the Staff Committee that Council involvement in the local land management planning process for each National Forest provides the best mechanism for establishing program levels that are responsive to the needs of Alaska.

It is, therefore, the Staff Committee's recommendation that the Council convey to the Chief of the U.S. Forest Service the importance to Alaska of U.S. Forest Service program levels, among others, in the following areas:

- Fisheries management and enhancement
- State/Federal cooperative program levels needed to meet State goals as identified in State Forest Resource Plans
- Research programs designed to facilitate the development of Alaska's vast potential for producing renewable forest resource products.

Lisa Parker
State Staff Coordinator

Ron McCoy
Federal Staff Coordinator

M-113

M-114

Citizens' Advisory Commission on Federal Areas

515 Seventh Avenue
Suite 310
Fairbanks, Alaska 99701
(907) 456-2012

April 6, 1984

Mr. Bill Edwards, RPA Co
Alaska Region
USDA Forest Service
Post Office Box 1628
Juneau, Alaska 99802

Dear Mr. Edwards,

The Citizens' Advisory Commission on Federal Areas has reviewed the Draft Resource Planning Act Program. Enclosed are comments outlining the Commission's concerns with U.S. Forest Service management and operations in this State.

After reviewing all the alternatives, Alternative 6 (Implement Plans) seems to best meet Alaska's needs for three reasons:

1. It takes into consideration the plans that have been developed specifically for Alaska and with participation by the citizens of this State.

2. It presents the most balanced approach to Alaska's natural resource development and maintenance.

3. It allows for the highest levels of research support for long-term resource needs.

Additional supporting reasons for Alternative 6 are described in the alternative coverage on pages 10 and 11 and in the Comparison of Alternatives section on page 14.

Overall, document format could be helped by greater definition of terms, interpretation of subjective phrases and consistency in date and number usage in comparison statements.

Also, the environmental effects of each alternative could have been covered under the detailed consideration of alternatives for easier comparison. The enclosed comments use this format.

Although the RPA Program is designed to deal with the forest resources nationwide, more specific consideration could have been given to Alaska. Due to its large size, climate, location and developing status, Alaska has unique problems not found in the other regions of the country. Many of the goals in the different alternatives do not address this unique situation.

Alaska is most favored by implementation of plans and guidelines developed specifically for this Region. Of particular concern would be any possible conflicts between Alaska's Department of Fish and Game standards and those of the Forest Service such as are discussed in Alternative 9.

Any change in land status from multiple-use to wilderness classification would be very controversial and would result in increased pressures on the remaining land available for consumptive resource use and development.

Overall, a well-planned, balanced, multiple-use approach by the U.S. Forest Service in establishing goals for the next 50 years would be, both economically and culturally, in the best interests of Alaska's citizens.

Sincerely,

Bettye Fahrenkamp, Chairman
Alaska State Senator

M-115

BRUCE BABBITT, Governor

Commissioners
FRANK FERGUSON, JR. Yuma, Chairman
FRANCES W. WERNER Tucson
CURTIS A. JENNINGS Scottsdale
JOHN J. GISI Flagstaff
FRED S. BAKER Elgin

Director
BUD BRISTOW

Deputy Director
ROGER J. GRUENEWALD

ARIZONA GAME & FISH DEPARTMENT

2222 West Greenway Road Phoenix, Arizona 85023 942-3000

April 9, 1984

Mr. M. J. Hassell, Regional Forester
Southwestern Region
U.S.D.A. Forest Service
517 Gold Avenue, S.W.
Albuquerque, NM 87102

Re: Draft Environmental
Impact Statement
1985 RPA Program

Dear Mr. Hassell:

The Department has reviewed the subject draft environmental impact statement (DEIS) and respectfully submits the following comments.

It is quite apparent that the Forest Service spent considerable time and effort developing the DEIS in a manageable form that is both comprehensive and concise, particularly where nine (9) different alternative RPA programs are evaluated and compared as to their relative output and environmental impact. These alternative programs adequately cover the range of options to achieve the National Goals and, for the most part, the data used to make the comparisons of alternatives are accurate. However, the resource values for fish, wildlife, and recreation used in the 1985 RPA are not acceptable. These values are much lower than recent study information seems to indicate (e.g., the multi-agency cooperative study to determine the economic value of Idaho's fish and wildlife). Since economic values are an important component of the RPA process, the most accurate values must be utilized. 36 40 43

As the Department stated in commenting on the alternative goals for the 1985 RPA Program, we cannot support any program or alternative which purports to produce significant adverse impacts on Arizona's fish and wildlife resources, or that conflicts with

An Equal Opportunity Agency

our legal responsibilities, regardless of the social, economic, and political demands for comsumptive commodities. We believe that integrated resource management is essential to create and maintain diverse and productive habitats for all forms of fish and wildlife, and that there be equity between all opportunity areas/resource programs in the multiple-use management of National Forest Lands. 39

To that end, the Department favors Alternative 6 (Implement Plans) as the national program providing the necessary mix of elements to achieve the desired goals, and at the same time, taking into consideration problems and/or needs of a regional nature. Ideally, Alternative 3 (High Non-Market) would provide the greatest array of benefits to fish and wildlife resources but, realistically, may not achieve the necessary multiple-use mix. Further, Alternative 6 would continue the land and resource management planning process which incorporates states' comprehensive plans for wildlife, which emphasize economic species as well as other public interest species.

The Department appreciates the opportunity to offer our comments on the DEIS for the 1985 RPA Program.

Sincerely,

Bud Bristow, Director

Robert K. Weaver
Habitat Evaluation Coordinator
Planning and Evaluation Branch

RKW:ph

STATE OF CALIFORNIA—THE RESOURCES AGENCY GEORGE DEUKMEJIAN, *Governor*

DEPARTMENT OF PARKS AND RECREATION

P.O. BOX 2390
SACRAMENTO 95811

(916) 322-7384

MAR 2 2 1984

Mr. Zane G. Smith, Jr.
Regional Forester
Forest Service
630 Sansome Street
San Francisco, CA 94111

Dear Zane:

I appreciate the opportunity to comment on the 1985-2030 Resources Planning Act Program - DEIS. The 1979 RPS Assessment, the updated Assessment Supplement and this DEIS will provide excellent guidance for the management and administration of the NFS, for cooperative state and private forestry and for forestry research. Through documents such as these, I'm sure the selection of the preferred alternative will further the cooperation existing between all land managing agencies, including this department.

Zane, I have evaluated the nine RPA Program alternatives for their inherent benefits, their environmental effects, potential environmental consequences and implementation costs, especially relating to the NFS. Based on this department's responsibility to ensure that the types, qualities and extent of recreational opportunities in California are met now and in the future, I endorse the fourth alternative.

Alternative 4 will achieve high output levels of both market and nonmarket resources; a balanced system which I feel is eminently necessary. In fact, Alternative 4 proffers a high level of outputs in all Opportunity Areas and is highly responsive to the demands identified in the Assessment.

Alternative 4 represents a management strategy responsive to the long-term goals identified in the President's revised Statement of Policy for the RPA Program and represents the maximum achievement of multiple use.

Although Alternatives 1-5 ostensibly provide recreation funding at constant or decreased levels, recreation use increases nearly 60% from 226 million RVDs in 1986 to 411 million in 2030, by the direction of Alternative 4. This is the highest recreation use level in a balanced system; one which does not emphasize only the nonmarket resource outputs and does not change resource levels back to 1980 objectives.

Although Alternatives 6 & 8 provide the largest capital investment funding for recreation, investment funding for Alternative 4 is only slightly below Alternatives 6 & 8 by Year 2000.

My preference for Alternative 4 is also based on a sensitivity to the need for key investments which are the foundation of future output and based on sound social economic, biological and ecological management principles.

I completely concur with your goal and opportunities statement for the Recreation Opportunity Area with the addition of the following objective:

- o providing a balanced system of forest and range land in which certain recreation areas will be held in trust as irreplaceable portions of this nation's natural heritage.

Thank you for the chance to review the DEIS. I look forward to answering any questions you may have concerning this letter.

Sincerely,

Wm. S. Briner
Director

Resources Building
1416 Ninth Street
95814

(916) 445-5656

Department of Conservation
Department of Fish and Game
Department of Forestry
Department of Boating and Waterways
Department of Parks and Recreation
Department of Water Resources

GEORGE DEUKMEJIAN
GOVERNOR OF
CALIFORNIA

THE RESOURCES AGENCY OF CALIFORNIA
SACRAMENTO, CALIFORNIA

Air Resources Board
California Coastal Commission
California Conservation Corps
Colorado River Board
Energy Resources Conservation
and Development Commission
Regional Water Quality
Control Boards
San Francisco Bay Conservation
and Development Commission
Solid Waste Management Board
State Coastal Conservancy
State Lands Commission
State Reclamation Board
State Water Resources Control
Board

FEB 21 1984

Mr. Zane G. Smith, Jr.
Regional Forester
U.S. Forest Service
630 Sansome Street
San Francisco, CA 94111

Dear Zane:

Thank you for the opportunity to review the Draft Environmental Impact Statement (DEIS) for the Resources Planning Act (RPA) 1985 Program.

Our Department of Forestry (CDF) reviewed the Preliminary DEIS in September 1983 and submitted comments to Mr. J. Lamar Beasley, Deputy Chief for Programs and Legislation. The questions that we had at that time were adequately answered by your letter of October 14, 1983.

In our correspondence to Mr. Beasley we indicated that Alternative 6 is preferred. It provides a strong response to the National Goals and will implement National Forest System management plans, state forest resource program plans, and research program plans. Implementation of these plans will complete an important linkage that will provide opportunities to improve the balance of resource production on public and private land and increase benefits to the public.

The addition of Alternative 9 and the adjustments in Alternative 2 and 4 since the Preliminary DEIS is a positive step and has broadened the decision space for selection of the Preferred Alternative. We still, however, believe that Alternative 6 should be preferred.

We strongly support the RPA process and feel you have done well in keeping with a tight schedule. RPA is important in that it provides an integrated approach to the management of resources and a framework for adjusting national, state, and local interests with resource capabilities.

We have appreciated the opportunity to work with you at the various stages in the development of the DEIS. I anticipate that this type of relationship will continue in the future. In

particular, I encourage your staff to work closely with the Department of Forestry's Forest Resources Assessment Program (FRAP) in the updating of the RPA Assessment and Program for 1990. FRAP, as you know, is required by the California Legislature to develop a statewide forest assessment as a basis for commenting on the RPA process. I think that a number of efficiencies and better products can result through a close cooperation between our respective assessment groups.

I understand that Mr. Jerry Partain, CDF Director, attended a briefing on the DEIS last week in Sacramento; and at this time, we have no additional questions. We plan to remain very active in forest planning and look forward to our continued involvement in the RPA and National Forest System planning processes.

Sincerely,

Gordon K. Van Vleck
Secretary for Resources

M-117

Resources Building
1416 Ninth Street
95814

(916) 445-5656

Department of Conservation
Department of Fish and Game
Department of Forestry
Department of Boating and Waterways
Department of Parks and Recreation
Department of Water Resources

GEORGE DEUKMEJIAN
GOVERNOR OF
CALIFORNIA

THE RESOURCES AGENCY OF CALIFORNIA
SACRAMENTO, CALIFORNIA

Air Resources Board
California Coastal Commission
California Conservation Corps
Colorado River Board
Energy Resources Conservation
and Development Commission
Regional Water Quality
Control Boards
San Francisco Bay Conservation
and Development Commission
Solid Waste Management Board
State Coastal Conservancy
State Lands Commission
State Reclamation Board
State Water Resources Control
Board

Mr. Zane G. Smith, Jr.
U.S. Forest Service
630 Sansome Street
San Francisco, CA 94111

April 5, 1984

Dear Mr. Smith:

The State has reviewed the Draft EIS, Resources Planning Act Program, 1985-2030, submitted through the Office of Planning and Research in accordance with the National Environmental Policy Act of 1969. Review was coordinated with the Tahoe Regional Planning Agency, State Lands Commission, Air Resources and Water Resources Control Boards, and the Departments of Conservation, Fish and Game, Forestry, Water Resources, Food and Agriculture, and Transportation.

The Department of Fish and Game (DFG) commented on February 25, 1982, on the Alternative Goals statement prepared by the Forest Service (copy attached). DFG finds that the issues raised in those comments have not been resolved in the Draft EIS.

DFG continues to question the Forest Service's use of the term "viable population" for the wildlife and fish management goals. To accept the use of this term would be inconsistent with DFG's mission to preserve sufficient populations of fish and wildlife to be used and enjoyed by the people of the State, now and in the future. **25**

DFG also questions the feasibility of significantly increasing timber production without adverse impacts to fish and wildlife. This concern remains because most of the alternatives present a prospect of substantial increases in timber production. Because a Preferred Alternative has not been selected, DFG must assume that any of the proposed alternatives may be selected, even Alternative 9 (which would conflict with Federal statutes protecting rare and endangered species). **33**

The Department of Conservation has reviewed the subject document from the perspectives of energy production (petroleum and geothermal) and soil conservation. Based upon that review, the Department prefers Alternative 6 because of its emphasis on USFS coordination with State plans and on the greater flexibility offered by having each Forest determine its own resource production goals. The Department believes that State preferences for energy development and soil conservation would receive more attention at the forest level than at the national or regional levels.

M-118

During its meeting with the Forest Service on March 15, 1984, the Department pointed out that all resource reserves were not inventoried in the RPA, because wilderness and other areas legally exempted from development were not included. The Department believes that the Final EIS should indicate that resource reserves in withdrawn areas are not included in the RPA totals.

The Department is involved in mapping and monitoring the State's non-public grazing land areas, and would support USFS activities similarly inventorying grazing on its lands.

The Department of Water Resources comments that the treatment of water-related aspects of resource management appears satisfactorily, except that "water yield" is not defined. Several alternatives involve significant increases in the "water yield" of the national forests. It is impossible to evaluate this information without knowing if water yield is synonymous with streamflow or water supply. Because there is a significant difference between the two definitions, the Department recommends that "water yield" be defined.

The Tahoe Regional Planning Agency has commented on this document by letter of March 23, 1984 to Ken Fellows of the Resources Agency. A copy of that letter was sent to the Lake Tahoe Basin Management Unit.

Thank you for providing an opportunity to review and comment on this significant document.

Sincerely,

Gordon F. Snow, Ph.D
Assistant Secretary for Resources

Attachment

cc: Office of Planning and Research
1400 Tenth Street
Sacramento, CA 95814

*(SCH 84011612)

M-119

STATE OF CALIFORNIA — GEORGE DEUKMEJIAN, *Governor*

STATE WATER RESOURCES CONTROL BOARD
P.O. BOX 100, SACRAMENTO, CALIFORNIA 95801

3/16/84

Mr. Zane G. Smith, Jr.
Regional Forester
Forest Service, USDA
Pacific Southwest Region - RPA
630 Sansome Street
San Francisco, CA 94111

Dear Mr. Smith:

NATIONAL RESOURCES PLANNING ACT PROGRAM DRAFT ENVIRONMENTAL IMPACT STATEMENT

A review of the National 1985 Resources Planning Act (RPA) Program Draft Environmental Impact Statement (EIS) reveals a broad scope of planning programs indicated in the nine program alternatives.

Since our agency is concerned with water quality, we would support programs contributing the most to improving water quality (fewest "acres disturbed," hence, least soil erosion and negative impact on water quality) for Forest Service Region 5.

The most attractive alternative from the standpoint of water quality is alternative number 3, which will result in the greatest improvement in total watershed acreage. This includes the least "acres disturbed" (weighting factors applied) for road and minerals development, fuel treatment, and, proportionately, the next to the lowest proposal for disturbance due to timber harvest and reforestation.

Thank you for the early opportunity to comment on the draft EIS for the National Resources Planning Program (1985-2030). Please direct any questions regarding our comments to John Huddleson at (916) 322-0211.

Sincerely,

Edward C. Anton, Chief
Division of Technical Services

cc: Mr. Bruce Walters
State Clearinghouse
1400 Tenth Street
Sacramento, CA 95814

Mr. C. K. Fuller
Department of Water Resources
1416 Ninth Street, Fourth Floor
Sacramento, CA 95814

TAHOE REGIONAL PLANNING AGENCY
P.O. Box 8896
South Lake Tahoe, California 95731

2155 South Avenue — (916) 541-0246

March 23, 1984

Mr. Ken Fellows
California State Clearinghouse
1400 Tenth Street, Room 121
Sacramento, California 95814

Subject: Resources Planning Act Program
DEIS/U.S. Forest Service #84011612

Dear Ken:

A review of the Draft Environmental Impact Statement for the National 1985 Resources Planning Act, U.S. Forest Service has been completed. The Tahoe Regional Planning Agency's comments of this document are detailed below.

1. Of primary interest to the Tahoe Regional Planning Agency is a lack of policy direction for areas of special significance. The Lake Tahoe Basin, recognized by the Congress of the United States and the States of California and Nevada in their signing of the Tahoe Regional Planning Compact (PL96-551, December 19, 1980) as a region which "exhibits unique environmental and ecological values which are irreplaceable", should not be bound by a document written on a national or regional scale. The U.S. Forest Service controls 133,934 acres of land within the Lake Tahoe Basin, 65.3 percent of the Basin area, a significant amount in light of land disturbance limits identified in the Lake Tahoe Basin 208 Plan (under authority of the Clean Water Act) and the Regional Plan for the Lake Tahoe Basin. Under the authority of the Santini-Burton Act, future land acquisitions will further enlarge that amount. The Santini-Burton Act passed by Congress on December 23, 1980 authorized a major federal land acquisition program for the purpose of protecting and improving water quality in the Lake Tahoe Region. The Act specifically states that "the unique character of the Lake Tahoe Basin is of national significance deserving of further protection and management". Forest Service activities on these lands greatly affect the Region and, therefore, should be consistent with the goals and policies of the Region's governing agencies which are in many instances much more constraining than national management standards. The DEIS should address such areas of significance and modify Forest Service direction in those areas to reflect mandated standards. At a minimum the preferred alternative should place special emphasis on areas of national significance, recognizing these locally mandated standards.

2. The DEIS reflects a shift towards productivity on national forest lands with environmental protection as a consequence. In many of the alternatives an adverse impact must first occur, as in ground disturbance during timber harvesting, before a beneficial impact is initiated as mitigation. Mitigation in addition to remedial steps necessary to guarantee the continuance of natural resources must be a part of a national resources management program to keep the gap between productive, erosion free and unproductive, unstable forest lands from widening to an unmanageable level. The preferred alternative should include remedial programs on national forest lands designed to identify and correct existing problem areas as well as placing a priority on mitigation of negative impacts. **33**

3. Urban forest research is an area which will demand substantial support in the near future. Recently urbanized areas encroaching into the forest are prompting insect and disease outbreaks on a large scale when compared to the available open space. Research into the cause and effect relationship between urbanization and the forest environment may lead to improved design and building methods. A national direction for forestry research should set as a goal increased studies in urban forestry.

4. The DEIS lists nine program alternatives. Each is discussed in depth without a specific alternative being chosen. The final recommended program may be a specific alternative or a compilation of several. For the Lake Tahoe Basin, a program of forest management with emphasis on environmental protection beyond the management standards practiced elsewhere is imperative. Such a program would include management based on silvicultural principles stressing amenity values such as water quality, wildlife habitat, recreation and scenic resources, while de-emphasizing commercial marketing of forest products as a priority. **39**

Thank you for this opportunity to comment on the Draft Environmental Impact Statement. Please retain the Agency on your mailing list for the final EIS including the response to comments section.

Sincerely,

Steve Chilton
Senior Environmental Investigator

SC:md

cc: Lake Tahoe Basin Management Unit

M-120

STATE OF COLORADO RICHARD D. LAMM, Governor
DEPARTMENT OF NATURAL RESOURCES
DAVID H. GETCHES, Executive Director
1313 Sherman St., Room 718, Denver, Colorado 80203 866-3311

Geological Survey
Board of Land Commissioners
Mined Land Reclamation
Division of Mines
Oil and Gas Conservation Commission
Division of Parks & Outdoor Recreation
Soil Conservation Board
Water Conservation Board
Division of Water Resources
Division of Wildlife

April 9, 1984

James F. Torrence, Regional Forester
United States Forest Service
11177 West Eighth Avenue
P. O. Box 25127
Lakewood, Colorado 80225

Dear Jim:

We appreciate the opportunity to comment on the Draft Environmental Impact Statement on the 1985-2030 Resources Planning Act Program. The document presents very useful and interesting information about the national management of national forests and gasslands. In view of the large acreage managed by the USFS in Colorado, we view the RPA Program as an important document which demands our close attention.

The National Goals and Opportunities discussed on pages 1-11 to 1-20 are generally quite sound. We do suggest, however, that the timber goal (1-11) should be revised to include explicit mention of the benefits of a "healthy forest" -- e.g., maintaining diverse habitat for wildlife; maintaining the scenic qualities of aspen; preventing large-scale wildfires; and avoiding epidemics of diseases and pests, especially in areas of special sensitivity, such as ski areas, areas adjacent to communities, or areas with timber of high value. In Region 2, the USFS has stressed these benefits as an important contributing rationale for the Service's vegetation management program. The discussions of disease and pests on pages 2-73 and 3-13 do not adequately address the concerns that have been raised in Region 2. **38** **39**

The National Goal for Recreation should also be reworded slightly (1-13). The Goals for wildlife and wilderness speak of "assuring a diverse, well-distributed pattern of habitat" and "managing. . . . to enhance the quality of experiences." The concepts of "assuring" and "managing" are much more aggressive than the phrasing chosen for the Recreation Goal, "provide outdoor recreation opportunities. . . . by providing facilities. . . . where cost effective." Given the heavy recreational use of many national forests, we would encourage the USFS to take an aggressive posture of **38**

managing the recreational resource by such devices as providing information about resources to the public and creating permit systems or other means to moderate usage of heavily-impacted areas. The phrase "where cost effective" should also be defined to make it clear that the measure is beneficial to the economy, not merely as reflected in government receipts.

The DEIS focuses primarily on nine management alternatives. Of the nine, 3, 6 and 8 seem to be the most attractive from our point of view, although it is difficult to make a firm judgment. The alternatives all have names which suggest general policy orientations -- e.g., "high market," "reduced budget." These policy orientations should be discussed more explicitly.

For example, the economic impact of different approaches to managing the national forests should be fully discussed. Page 2-87 of the DEIS suggests that on a national basis, recreation and wildlife may be more important to the national forests than timber. The text notes that the "recreation decision variable" ranges from 40% to 54% of net present value, and that the "timber decision variable" ranges from 30% to 43%. It would be helpful if the USFS could relate this information to its policy choices for prioritizing management objectives and for allocating scarce funds.

45

The RPA process should address important management issues which do not fit nearly into the quantitative analysis which dominates the DEIS. For example, in Colorado, roading is perhaps the most volatile issue. Can road closures be enforced effectively? What policies should guide decisions to close roads? Are roads built to excessively high and costly standards? Another important issue is that of fire management. Should the USFS use a "let burn" policy in more areas? Does the USFS do controlled burns as often as would be desirable from a multiple-use management perspective? Or to take another important issue, what approach should the USFS take to insure that the quality of service is maintained over the years when it turns recreational facilities over to the private sector for management? These issues are not addressed adequately in the draft RPA Program.

9

More than any other issue, the impact of drastic budget cuts deserves more attention. In the era of $200 billion federal deficits, it seems clear that the USFS will be placed under severe pressure to cut its budget drastically. The DEIS does include a "reduced budget" alternative, which shows that there will be very few benefits from budget cuts -- timber production, recreation use, wildlife, and many other outputs will drop. This may well be the case, although one might expect backcountry camping, some kinds of wildlife and certain

other uses of the forest would prosper under a hands-off approach. It is certainly true that there are articulate people who feel that less management may mean better management. The USFS should take these views seriously by explaining, for example, how the outputs on pages 2-40 and 2-41 are derived, so that it is clear to the reader why less management will hurt recreation, wildlife, and environmental values.

There are certain aspects of Alternatives #2 and #9 that demand our comment. Both would call for more than doubling the timber harvest in Colorado (K-16), and both would reduce wildlife habitat carrying capacity (2-91). Based on discussions with the Regional Forester about the desirability of increased aspen harvests, it is possible that increases in harvests of some species may be desirable. But the DEIS does not make an adequate case for the dramatic increases proposed in these two alternatives.

40

I am pleased to see that the USFS has recognized the importance of considering the quality of recreational opportunities to the extent of showing different dollar values for "standard" and "less-than-standard" visitor days and showing the proportion of visits that would not meet "management standards." It would be helpful if the DEIS could explain what these standards are. In a state like Colorado, where tourism is the second largest industry, the quality of recreational opportunities in the national forests and elsewhere is an important concern. Apparently, the size of the budget for recreation does not directly affect the ability of the USFS to meet recreation standards, for the two alternatives with the biggest capital budgets (6 and 8, page 2-60) still have 25-30% of recreation days not meeting standards (2-61), but other alternatives with smaller budgets meet standards 96% of the time (3 and 9, page 2-61). We would welcome a more complete discussion of the impacts of various management strategies on quality. We would also strongly suggest that the USFS choose an alternative which does meet standards 100% of the time.

The explanation of the dollar values set for recreation (pages F-6 and F-10-12) is inadequate. The USFS has reduced values by 37.5% for reasons that are not clearly explained and may not be defensible, at least with respect to Colorado. The rationale seems to rest on the assumption that the USFS does not provide a major part of the total supply of recreational opportunities (F-6). This is true in Colorado, and some other Rocky Mountain states. Also, would it not be appropriate to show slowly rising values for recreation? Certainly the supply of recreational opportunities is not easily expanded, but the demand is growing inexorably.

45

M-121

The DEIS suggests in several places that it will be necessary to establish fees for recreational use of national forests. The suggestion may be a bitter pill for the American public to swallow, especially in the West where access to public lands has historically been free. Imposing fees may be the only realistic alternative to providing adequate funding for recreation on the national forests, but certainly other options should be explored in the DEIS. One option would be earmarked revenues. Another would be shifts in the USFS's allocation of its own funds. It would be helpful to see an analysis of the economic impact of investing the marginal dollar in recreation programs as compared to other programs, such as timber or water yield increases. In making such a comparison, the valid measurement would be the economic impact on society rather than simply direct revenues to the USFS. In any event, the topic of financing for recreation is an important one and deserves more complete discussion in the final RPA Program. **45**

Sincerely,

David Getches

DAVID H. GETCHES
Executive Director

DHG:ljc

M-122

STATE OF COLORADO

Department of Local Affairs

Richard D. Lamm
Governor

DIVISION OF LOCAL GOVERNMENT
Pat Ratliff, Director

April 9, 1984

USDA Forest Service
Rocky Mountain Region
11177 West 8th Avenue
P. O. Box 25127
Lakewood, Colorado 80225

SUBJECT: Draft Environmental Impact Statement
1985 - 2030 Resources Planning Act Program

Dear Sir:

The Colorado State Clearinghouse has received the above-referenced draft Environmental Impact Statement and has distributed it to interested state agencies. Comments received from the Colorado Historical Society, Colorado Division of Wildlife and the State Soil Conservation Board are enclosed for your information.

Thank you for the opportunity to review this matter.

Sincerely,

S O Ellis

Stephen O. Ellis
Chief Planner

SE/vt
Enclosures

cc: Thomas E. Hamilton, USDA Forest Service, Washington

Letters available for review in RPA Files. Substantive comment included here.

1313 Sherman Street, Room 520, Denver, Colorado 80203 (303) 866-2156

DIVISION OF WILDLIFE

We have reviewed the subject document and find it difficult to grasp the real impact of each alternative upon Colorado's fish and wildlife resources. However, there is enough information presented in this RPA report to enable us to choose an alternative which would offset some of the projected annual loss of nearly two million acres of fish and wildlife habitat (page 1-9). Our analysis indicates that Alternative 3, the high nonmarket alternative, should be implemented to satisfy the national goal for fish and wildlife. This alternative is particularly adaptable to Colorado because it would utilize our recreational potential and increase employment while having a very minor effect upon the timber and livestock industries. Increased production from state and private forestry resources could help to offset these impacts.

If the demands for consumptive and nonconsumptive uses of fish and wildlife resources are to be satisfied, habitat protection and development on national forests must be maximized. This will require successful cooperation between state, local and federal agencies and an increased budget for fish and wildlife programs. The increased ski development in Colorado will continue to adversely impact our fish and wildlife populations regardless of the alternative chosen. This, plus habitat losses resulting from new towns, highways, subdivisions, water developments and mining emphasize the need to implement alternative three if we are to accomplish our responsibilities. The Resources Planning Act Program is extremely important to Colorado and should be used to enhance our natural resources for the nations public.

STATE SOIL CONSERVATION BOARD

Activities of primary concern to the Colorado Soil Conservation Board involve earth moving projects. All of the alternatives provided involve considerable soil disturbance, although the negative impacts will apparently be negated by reclamation activities - according to the statement, "Neither long-term soil productivity nor water quality will fall below legal standards in any alternative."

The alternative that causes the least amount of land disturbance with attention and research directed to reclamation is preferable. Alternative 3 appears to address such issues along with alternatives 6 or 9. Alternative 5 causes the least amount of soil disturbing activity, but it may also be economically unfeasible. Given the reclamation emphasis, the low percentage of increased detrimental soil disturbing activity and the beneficial wildlife aspects, alternative 3 is a desirable alternative.

COLORADO HISTORICAL SOCIETY

This office has the following comments regarding the consideration of cultural resources:

We acknowledge that the purpose of this document is to consider alternatives for the management and use of renewable resources within the forests. However, this office believes that it is important for the Forest Service (FS) to include consideration of non-renewable cultural resources as an integral part of its planning process and, indeed, as a goal with opportunities to identify, manage, and preserve significant cultural resources in conjunction with the management of the renewable resources rather than solely as an item in the Protection and Support Opportunity Area (page 1-19).

In this regard we wish to point out that ground disturbing activities, which may be associated with timber, range, recreation, and minerals/energy management have the potential to affect archaeological resources. Also, rehabilitating deteriorating facilities and maintaining existing facilities at recreation sites as well as removing incompatible uses and improvements in wilderness areas (both on page 1-14), have the potential to affect historical resources and possibly archaeological resources as well.

This office observes that cultural resources are not discussed in the Protection and Support section under the comparison of alternatives, nor as a significant environmental effect (Chapter 3), although the potential to affect such resources is addressed as part of the affected environment in Chapter Three.

Based upon the FS description of the nine alternatives, we have attempted to rank these alternatives in order from the the least to the greatest potential to affect cultural resources:

Alternative 5
Alternative 1
Alternative 3
Alternative 4
Alternative 6
Alternative 2
Alternative 7
Alternative 8
Alternative 9

While certain of the alternatives having greater potential to affect the resources also include greater emphasis on identifying and evaluating cultural properties, the fact remains that even with the proposed documentation of sites and data recovery, the properties would not be preserved. In addition it should be noted that the FS has the responsibility under the National Historic Preservation Act, as amended (Section 110(a)(2)), and Executive Order 11593 to identify and evaluate all significant cultural properties under its jurisdiction, whether or not these properties will be affected by project activities. Specifically the law describes the responsibility as follows:

"With the advice of the Secretary and in cooperation with the State Historic Preservation Officer for the State involved, each Federal agency shall establish a program to locate, inventory, and nominate to the Secretary all properties under the agency's ownership or control by the agency, that appear to qualify for inclusion on the National Register in accordance with the regulations promulgated under section 101(a)(2)(A). Each Federal agency shall exercise caution to assure that any such property that might qualify for inclusion is not adver-tently transferred, sold, demolished, substantially altered, or allowed to deteriorate significantly."

Until such time as the properties have been identified, it is not possible to fully assess the environmental impact of the various alternatives upon those that qualify for inclusion in the National Register. And, for that reason, we feel it necessary to emphasize the importance of the provision of the law above quoted, viz., to preclude the transfer, sale, demolition, or substantial alteration (including deterioration) of properties qualifying for inclusion in the National Register.

M-124

CSU

Colorado State Forest Service

Colorado State University
Fort Collins, Colorado
80523

April 3, 1984

James F. Torrence
Regional Forester
USDA Forest Service R-2
P. O. Box 25127
Lakewood, Colorado 80225

Dear Mr. Torrence:

This letter constitutes the comments of the Colorado State Forest Service concerning the 1985 RPA Draft Environmental Impact Statement, including the 1979 Assessment and its 1983 Supplement. As you requested in the DEIS, these comments are being sent to you before being forwarded to the National RPA coordinator.

First, while there may be room for nine or ninety alternate programs in a "decision space" (output combinations are probably infinite), rationale presented for some of the nine alternatives put forth in the DEIS is inadequate to explain their inclusion. Nine is too many, in view of their often minute end differences; four or five significantly different programs would suffice for soliciting the input you seek in your planning process.

Through process of elimination, Alternatives 1 and 5 are unacceptable in our view due to their too low level of public investment in forest resources. The relative merits of any of the other seven alternatives may ride, as much as anything, on the usual uncertainty of projections as noted in the Assessment Supplement (page 3). For example, the timber harvest in the South is projected to rise another 122% by 2030. Since soybeans and trees cannot productively occupy the same acre, such increases in both food and fiber must come from commensurate productivity increase efforts which will require increased investment. The fickleness of political winds may seriously undermine the whole thrust. 40

Alternative 6 appears to be different from the rest in that it may represent a more "from-the-ground-up" planning approach than a top-down one. Since its outputs and costs are not markedly different (excluding 1 and 5, which we have above),

Alternative 6 appears to be the most attractive to us. We endorse the concept of using the State plans (recently developed by each state) as the basis for a national S&PF program, and that rationale would seem to apply comfortably to the NFS program as well (although the level of investment in the NFS may not be high enough in Alternative 6).

Thank you for this opportunity for input on your planning.

Sincerely,

Del Brown

Delmer L. Brown
Deputy State Forester

es

M-125

STATE OF FLORIDA — FLORIDA DEPARTMENT OF AGRICULTURE & CONSUMER SERVICES

DOYLE CONNER, COMMISSIONER * 3125 CONNER BLVD. TALLAHASSEE 32301 *Division of Forestry

FREP
GLR CORR
EIS

March 15, 1984

Mr. Walter Kolb
Office of Planning and Budgeting
Office of the Governor
The Capitol
Tallahassee, Florida 32301

Dear Walt:

We have reviewed the Draft Environmental Impact Statement Resources Planning Act Program 1985. The draft appears to be a thorough assessment of the forest resource environment.

Of the nine alternative program levels listed we would prefer Alternative Six which represents the preferred program levels from National Forest Planning and State Forest Resource Planning. Alternative Six reflects the state/federal cooperative program needed to meet state goals as identified in State Forest Resource Plans.

Our second choice would be Alternative Seven (High Present Net Value). Alternative Seven provides resource outputs at economically efficient levels, subject to meeting minimum legal requirements and protecting community stability. Alternative Seven captures the most cost-effective opportunities based on the results of recent cost-effectiveness studies such as the analysis of the 1979 Forestry Incentives Program (FIP) and the Cooperative Fire Analyses. The level of Alternative Seven varies regionally and would be determined by timber site productivity.

If you have any questions or need additional information, please let me know.

Sincerely yours,

John M. Bethea
Director
904/488-4274

STATE OF FLORIDA

Office of the Governor

THE CAPITOL
TALLAHASSEE 32301

BOB GRAHAM
GOVERNOR

April 9, 1984

Mr. R. Max Peterson
Chief, Forest Service
Washington, D.C. 20013

Dear Mr. Peterson:

Pursuant to your request, this Office reviewed and coordinated a State agency review of your Draft Environmental Impact Statement, 1985 Resources Planning Act Program. The document describes nine alternative programs from which a U. S. Forest Service recommended program will be developed. We understand that a recommended program for managing the National Forest System lands will be prepared by late 1984.

As a part of our review process we requested comments from interested State agencies. Attached for your consideration are comments from the Departments of Agriculture and Consumer Services (Division of Forestry) Natural Resources, State and Game and Fresh Water Fish Commission. The Department of Environmental Regulation indicates that their comments may be forthcoming shortly.

The Division of Forestry finds that their preferred program is Alternative Six as it better reflects the State/Federal cooperative program needed to meet State Forest Resource Plans. Their second choice is Alternative Seven as it is the most cost-effective of the nine alternatives. The Game and Fresh Water Fish Commission finds that Alternative Three would provide the best benefit for fish and wildlife resources. Alternative Six is also selected as it would provide more funding for fish and wildlife research.

Governor Graham has expressed concern for the conservation of our forest lands. His goal is to improve the utilization, protection and management of our forest lands. This resource must be conserved for the enjoyment of our citizens and for future generations. As Florida's population increases, development pressures on our forest lands will accelerate. It is critical that our forest resources, particularly those in public ownership, be managed to ensure their future. Short term management benefits for Florida's public forests need to be de-emphasized if we

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are to achieve longer term conservation goals.

Considering the importance of this document and its possible effect on Florida's forest, we request that you consider our response including the attached agency comments when developing your final impact statement. We look forward to evaluating and commenting on your final proposal including your selected management alternative for Florida's forest lands.

Thank you for giving us the opportunity to comment.

Sincerely,

Walter O. Kolb
Sr. Governmental Analyst

WOK/jkc

cc: Mr. John M. Bethea
Mr. George W. Percy
Mr. Dale Adams
Mr. F. G. Banks
Mr. John Outland

M-126

ELIZABETH P. TORRES
DIRECTOR

JOAQUIN N. NAPUTI
Deputy Director

Agricultural Development Services 734-3947
Aquatic & Wildlife Resources 734-3945
Forestry & Soil Resources 734-3948
Animal Industry 734-3940
Plant Industry 734-3949

Sales & Permit Info 734-3943
Administrative Ser. 734-3941/2

AGANA, GUAM 96910

March 28, 1984

Regional Forester
Forest Service, USDA
Pacific Southwest Region-RPA
630 Sansome Street
San Francisco, CA. 94111

Dear Zane:

After going through the '85 RPA Draft Environmental Impact Statement and reviewing the nine alternatives as well as the appendices, I feel that the staff members who prepared the draft did a very thorough, and hence commendable, job. Considering it in light of impacting on state and private forestry, we contend that given the fiscal constraints with which we are presently faced and which we can presumably expect in the future, Alternatives 6 and 7 appear to address our needs best. The need to implement State Forest Resource Plans as well as the other plans is, indeed, paramount. This need coupled with that to provide outputs at efficient levels so community stability is assured will incorporate the best of both alternatives.

The appendicies, and especially Appendix J dealing with International Forestry, are all well done. We trust that the efforts put forth to prepare this document will result in wise, and therefore the best use of our renewable natural resources.

Looking forward to seeing you in May, I am,

Sincerely yours,

Bill

WILLIAM S. NULL
Territorial Forester

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII

SUSUMU ONO, CHAIRMAN
BOARD OF LAND & NATURAL RESOURCES

EDGAR A. HAMASU
DEPUTY TO THE CHAIRMAN

DIVISIONS:
AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
1151 PUNCHBOWL STREET
HONOLULU, HAWAII 96813

April 4, 1984

Mr. Zane G. Smith, Jr.
Regional Forester
Forest Service, USDA
Pacific Southwest Region - RPA
630 Sansome Street
San Francisco, CA 94111

Dear Zane:

Regarding the Draft EIS for the 1985 RPA Program, I am glad to see that several concerns expressed in our review of the Preliminary Draft have been answered. However, we have problems trying to fit together the programs and impacts of the several alternatives as they are now presented.

In the program section (Chapter 2) there is discussion of the cubic foot volume of timber produced as a result of S&PF activities for each alternative and then the summary in Tables 2.31 and 2.32. However, these basic timber data are not included in any 'output' table in the text or appendices. The preliminary draft had included timber harvested as S&PF output but it has been deleted from the present draft. **30**

In the consequences section (Chapter 4) the harvest of softwood timber from private lands for each alternative is shown as an economic effect. Is this all private lands or just those influenced by S&PF programs? How can the harvest of softwoods from private lands in year 2030 (Tables 4.1, 4.5, et seq) vary only between 10,166 million BF and 11,118 million BF (CV = 2.57%) while imports vary from 6,444 to 11,151 million BF (CV = 13.39%) and harvest from NFS lands varies from 8.0 to 22.1 billion BF (CV = 28.37%)? What brings this stability to private lands in the light of strongly diverging Forest Service policies? Are the private land sales figures realistic in view of the wide variability of timber production of softwoods (631 to 3,357 million CF; CV = 41.84%) as reported in Table 2.31? Even the increased output due to utilization improvements varies form 95 to 324 million BF with a CV = 31.70%.

Long-term sustained yield capacity (apparently from NFS lands only) remains constant throughout the planning period. Isn't the reforestation effort having any effect? Or genetics and other timber research? As we

understand it, the land suitable for timber production is an administrative decision. Then the long term sustained yield capacity is the yield of those acres as it may vary from alternative to alternative due to management intensity. Alternative 2 calls for a reasonable increase in yield by year 2030 of 22% from 13% more land compared to Alternative 1. Alternative 9 calls for an additional yield increase of 42% with only an additional 11% more land. Even if the land could administratively be made available for timber in 1986, we do not see how the potential 2030 sustained yield capacity can be reached the same year. **20**

The introduction to Chapter 4 stated that "Although the NFS and S&PF and Research Programs are discussed separately in Chapter 2, the effects displayed here portray the net result of all of these programs together." Although some statements are general we cannot find a table to which the statement applies. For example, reforestation is the only activity in which the output and effects are given in the same terms (acres) for NFS and S&PF programs. Therefore the data for reforestation in Table 4.3 and others like it can be identified as referring only to NFS programs. Since different terms are used for outputs and effects for all other activities there is no way to find out to which lands the other effects refer. **34**

In addition to those difficulties we can not understand why one set of years are used for program discussion and a different set for effects discussion and still a third set for one special discussion.

The graphs of visual quality are labelled (NFS) but the tables in Chapter 4 give no indication of that limitation. The appendix should contain basic data rather than graphical summaries. Especially since the graphs are drawn with different scales making regional comparisons difficult.

Since we cannot figure out what the effects of a no-change situation are there is little incentive to do more than a superficial review of the other alternatives. Even at that level we find question after question. For example, what is there about Alternative 9 that makes it 5 times as 'bad' in Region 4 as any of the others but not much worse than Alternative 5 in Regions 1, 2 & 3? What is there about Region 5 that makes the visual effects so much more variable there?

Sincerely yours,

LIBERT K. LANDGRAF
Administrator

bcc: George R. Ariyoshi, Governor
Susumu Ono, Chairperson

IDAHO FISH & GAME

600 South Walnut • Box 25
Boise, Idaho 83707

April 9, 1984

Mr. Charles T. Coston
Regional Forester
U.S. Forest Service
Region 1
Federal Building
Missoula, Montana 59807

Dear Tom:

We have reviewed the DEIS for the 1985-2030 Resources Planning Act Program and have the following comments which are presented under the major categories of (1) general comments, (2) economics, (3) specific questions and concerns and (4) alternatives.

Our comments cover some positive points, some unacceptable points, and a series of questions on the processes employed.

General Comments

On the positive side, the nine alternatives adequately cover the range of possible outcomes.

We understand that a document of this size and complexity is extremely difficult to prepare; but it is even more difficult for persons unfamiliar with the subject to analyze and understand, and it appears to be misleading and confusing in many areas.

Our interest is ultimately what happens to fish and wildlife and habitat on the ground, and concepts on a national level can be fairly meaningless. Impacts in Idaho are so easily masked that they are virtually impossible to detect even if further broken down by regions. Consequently, our intensive scrutiny must later be concentrated on the final forest land management plans.

Economics

Even given the above difficulties, our major concern is the unjustifiably low economic values for wildlife and concepts which distort the relative values of the various resources both within and among the alternatives and make a realistic

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EQUAL OPPORTUNITY EMPLOYER

comparison impossible. The thrust of your memo of February 24, 1984 requesting use of recent data from our cooperative study of economic values of wildlife is applauded. Recognizing that the values are still preliminary, we feel the data listed below will be closer to the final figures. The final values should be ready by the end of May, 1984 and it would be best to use them.

We feel that resource values used in the 85-RPA (Table F.2) are totally unacceptable. The values of fish, recreation, and wildlife should be significantly higher than the values listed in Table F-2. Three arguments support this claim: (1) The results of the Loomis and Sorg Report (Table F.4) were incorrectly adjusted downward; (2) The fees were apparently not included in these values; and (3) Preliminary results of the multi-agency cooperative study of the economic value of Idaho's wildlife are now available.

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First, the downward adjustments to the values in Table F.4 that are rationalized on pages F-11 and F-12 should be eliminated. Loomis and Sorg have done an admirable job of summarizing the empirical estimates of recreation, wildlife, and fish values. The values derived by the travel cost method represent net willingness-to-pay, not total willingness-to-pay, as stated. Therefore, the values in Table F.4 are comparable to values for other resources. The travel cost studies cited by Loomis and Sorg covered a range of site qualities (not just "higher quality sites") and many explicitly included substitute sites. It does not seem proper to question the accuracy of the raw data on trip length in this report (page F-12). Loomis and Sorg evaluated the data base of each study and it is not necessarily true that inaccurate trip lengths would inflate estimated values (e.g., if distance travelled was understated or days per trip were overstated, the values reported would be underestimates).

The discussion of the market-clearing price on page F-12 appears faulty. Studies cited by Loomis and Sorg were done with the inclusion of U.S. Forest Service sites in the national supply. Many of the sites were U.S. Forest Service sites and included substitutes. Therefore, the impact of U.S. Forest Service supply is already included in the values.

We also note that the range forage benefit values were not adjusted downwards, using the logic applied to recreation, wildlife, and fish (pages F-13 and F-14). The range values correctly measure the permittees' net

willingness-to-pay for forage. Since the value of range was correctly handled, why were the recreation values done incorrectly?

Second, the values reported by Loomis and Sorg (Table F.4) did not include fees. As stated in Table F.1 and emphasized in the range values (page F-14), the fees should be included in the values of recreation, fish, and wildlife. The U.S. Water Resources Council's Principles and Guidelines for benefit-cost analysis also supports the inclusion of fees in the net willingness-to-pay values. Therefore, we recommend the inclusion of fees in all values in Table F.2.

Third, preliminary results of a study to determine the economic value of Idaho's fish and wildlife indicate significantly higher values than those listed in Table F.4. The Idaho study is a cooperative effort involving the University of Idaho, the U.S.D.A. Forest Service Rocky Mountain Forest and Range Experiment Station, U.S.D.I. Fish and Wildlife Service, U.S.D.I. Bureau of Land Management, U.S. Corps of Engineers, and the Idaho Department of Fish and Game. Both travel costs and contingent value (bidding game) methods were used in a survey of 7,500 sportsmen. These preliminary values are:

Activity	Preliminary Net Willingness-To-Pay*($/WFUD)
Steelhead fishing	30
Coldwater fishing	57
Warmwater fishing	34
Deer hunting	50
Elk hunting	60
Upland game hunting	81
Waterfowl	64

*Fees are not included in these values

These values are still preliminary and subject to changes as the economists complete their analyses. Given the importance of economic values to the RPA process the best possible values must be utilized. We recommend that these preliminary values (or better, the final values which will be available within two months), be adjusted to include fees and then replace the values in Table F.2 for Regions 1 and 4 and any other similar

region. The results of this study were not available when the DEIS-85-RPA was developed, but page F-12, paragraph 5 indicates that continuing studies may provide improved fish and wildlife values. This study should certainly qualify as a basis for improved values.

Present Net Value (PNV) is one of the primary evaluation critiera. The discount rate has a significant impact on PNV, but was not prominently displayed. What is the discount rate?

Also, many of the intangible benefits of fish and wildlife are not given an economic value in this analysis. For example, only consumptive (hunting) values are attributed to wildlife. The considerable value of and rapidly expanding public participation in nonconsumptive uses of both game and nongame wildlife are completely ignored.

We appreciate the Forest Service's participation and assistance in the economic survey that will provide a more accurate base for evaluating alternatives and for the opportunity to comment on this DEIS.

Sincerely,

Jerry M. Conley
Director

cc: Wildlife
Fisheries
Regions

M-130

Illinois Department of Conservation
life and land together

LINCOLN TOWER PLAZA • 524 SOUTH SECOND STREET • SPRINGFIELD 62706
CHICAGO OFFICE - ROOM 100, 160 NO. LASALLE 60601
David Kenney, Director • James C. Helfrich, Assistant Director

April 5, 1984

Mr. Larry Henson, Regional Forester
USDA Forest Service
310 Wisconsin Avenue
Milwaukee, Wisconsin 53203

Dear Mr. Henson:

It is evident in reviewing the 1985 RPA Draft Environmental Impact Statement that the Private Non-Industrial Forest Owner (PNIFO) has not been given the attention deserving of them. In Illinois, 93% of all forestland is owned privately, so naturally it concerns me that the PNIFO has been excluded from the timber goal on page 1-11 and from the program issues on pages 1-20 through 1-23. This document, though possibly unintentional, has omitted more than half of commercial forestlands owned by the PNIFO which supplies a considerable quantity of timber to meet rising demands. Though this topic has been addressed briefly in the State and Private Forestry portions of each alternative, it has not been addressed in the depth needed to convey the importance of the Private Non-Industrial Forest Owner. **30**

In addition, the PNIFO not only supplies needed timber resources but also other important elements such as wildlife and fish habitat, recreational opportunities, decreased soil erosion and improved water quality. I suggest that the manner in which the PNIFO has been portrayed be reviewed and that this very important segment of landowners be included in the focal point of the discussion.

Each of the nine alternatives has been studied in respect to overall goals, services provided and funding levels for State and Private Forestry. Alternative six - Implement Plans is the Departments recommendation. Primarily, because it achieves many of the stated goals and it also provides the necessary tools to State and Private Forestry to assist the states on a one on one basis to meet the needs of each state. Alternative six also provides the opportunity for each state to implement their State Plans knowing that it will also contribute to accomplishing National goals as well.

No one knows better than each state what is needed to accomplish their goals and objectives. Whether the topic is timber production, wildlife and fish habitat, recreation opportunities or any of the other goals. State Plans have been written specifically for this purpose, and if the tools are not available to implement these plans, then ultimately they're implementation will be limited to the funds provided by the State. In addition, I feel very strongly that the Shawnee National Forest should be given the opportunity to implement the Plan they are currently developing. What is the purpose of producing these plans if in fact their productivity is limited? **41**

We in Illinois certainly support greater funding levels for State and Private Forestry. Additional funds would certainly assist us in addressing the needs of our 100,000 plus forest landowners. For Illinois, the future of forestry lies in the hands of the Private Non-Industrial Forest Owner.

Thank you for this opportunity to comment. Please feel free to call upon me if I may be of further assistance.

Sincerely,

DAVID KENNEY

DK:DT/rmb

C.C.: Allan S. Mickelson, State Forester

M-131

STATE of INDIANA

INDIANAPOLIS, 46204

DEPARTMENT OF NATURAL RESOURCES

JAMES M. RIDENOUR
DIRECTOR

February 14, 1984

Division of Forestry
613 State Office Building
Indianapolis, Indiana 46204

Mr. Thomas Hamilton
Director, RPA
USDA, Forest Service
Washington, D.C. 20013

Dear Mr. Hamilton:

We have reviewed the 1985 RPA Draft EIS and have prepared the following comments.

Generally we are very impressed with both the quality and quantity of work that went into this effort. The RPA process represents a model of public participation in the governing process. In that our system of government is based on citizen involvement, the Forest Service is to be congratulated for the way in which it has so successfully tackled this monumentious task. Although there are areas where individuals and special interest organizations will no doubt attack this document and the adequacy of this process, we believe that this document and the analysis techniques used are SOUND. Our greatest fear is that the product of the RPA process will be attacked by special interests that are obsessed with specific aspect of the RPA program. If these groups succeed in blocking implementation of the final program, or if congress fails to adequately fund the final program, then the considerable amount of time and money invested in this undertaking will have been wasted.

From our perspective, alternative 6 is the most appealing of the 9 alternatives. This alternative is based on the goals mutually agreed on by literally thousands of citizens from all walks of life. Indiana's contribution to this alternative was based on the goals established in our statewide forest management plan. This plan was developed over several years and reflects the wishes and desires of the many individuals and diverse interests that participated in its development. We are confident that our plan represents a logical, well balanced approach to meet the future needs identified by our state's residents.

Alternative 6 is a compilation of programs established by similar planning processes in other states and plans developed for individual national forests.

"EQUAL OPPORTUNITY EMPLOYER"

Together these plans represent the desires of literally thousands of individuals from virtually every state. These plans were not developed in Washington nor were they dominated by special interests or professional groups. Rather they are an expression of the grass root desires of the citizens of this country. It is difficult to imagine a process more consistent with our country's democratic philosophy. Further it is difficult to imagine how greater citizen involvement could have been utilized in the development of a comprehensive nationwide management program of this complexity.

We favor alternative 6 not just because it most reflects Indiana's needs, but because it is the alternative that most represents the expressed wishes of the citizens of this country.

One criticism we have pertains to economic criterion "PNV Receipts". Although this is valid and very useful for evaluating outputs from the national forest system, it grossly under estimates the impacts of state and private forestry (S&PF) program on the federal treasury. Most S&PF expenditures do not result in direct receipts for the federal government. However, they do produce significant tax income for the federal treasury. The use of this criterion under estimates the contribution S&PF programs have on federal tax receipts. Further this gives the false impression that these programs represent a net drain on the federal treasury. Although I do not have statistics to support this, most S&PF expenditures make their way back to the federal treasury through:

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* taxes payed directly by employees
* taxes on private income generated by S&PF programs (additional taxes paid by landowners assisted by S&PF programs)
* taxes from increased employment, economic activity and industrial effeciency created by S&PF programs.

To accurately assess the net impact that S&PF programs have on the federal treasury, these indirect sources of revenue should be considered.

In recent years major shifts in the respective roles of the federal and state governments in various programs have occurred. The debate surrounding this change has for the most part been beneficial. However, the last three federal budgets have represented a wholesale retreat on the part of the federal government from traditional program areas. Instead of cutting back in selected program areas, the cutbacks have for the most part been across-the-board. This is unfortunate as it has resulted in tremendous ineffeciencies by disrupting the continuity of many on-going programs. It is easy for the budget cutters to say that Indiana's forests are Indiana's responsibilities, and clearly they are. However, there is a very strong arguement to be made that Indiana's forests (like Indiana's farmland) are part of this country's strategic natural resources. Benefits arising from Indiana's forests acrue to all Americans and not just Hoosiers. Clearly the nation has stake in our state's forest resources. Clearly there is a legitimate role for the federal government in the development of this state's natural resources.

This last comment is not directed at the Draft EIS of the RPA process, but at what will be the temptation on the part of congress to only partially fund (or selectively fund certain aspects of) the final RPA program. This we feel would be a grave mistake. The final RPA program will represent a balanced program that expresses the will of the people. The final program should be implemented as a total package rather than being implemented selectively.

Sincerely,

John F. Datena

John F. Datena
State Forester

JFD/pm

M-132

COMMISSIONERS
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IOWA CONSERVATION COMMISSION

Larry J. Wilson — Director
Wallace State Office Building, Des Moines, Iowa 50319
515/281-5145

An EQUAL OPPORTUNITY Agency

April 2, 1984

Mr. Thomas N. Schenarts
Area Director
USDA Forest Service
370 Reed Road
Broomall, PA 19008

Dear Mr. Schenarts:

I have reviewed the draft environmental impact statement for the 1985 RPA Program, and wish to support Alternative 8 as the most appropriate for use in developing a recommended program.

In reviewing the impact statement, I have not assumed broad national policy insight. My observations are based on Iowa conditions and, to some extent, would apply to similar areas in other states.

The effectiveness of federal forestry programs in Iowa is influenced by several factors. Among these are:

1. Timber is not a major crop,
2. Public perception of forest value lies mainly in the nontimber contributions,
3. There are no national forests in Iowa,
4. Softwoods are almost nonexistent,
5. Fine hardwoods represent the highest timber value,
6. Grazing by domestic livestock is an important negative influence on forest retention and management,
7. Conversion of forestland to other uses is the primary concern.

Alternative 8 (1980 RPA) is most responsive to our resource concerns as indicated in the following accomplishment indicator categories:

Management Plans

Planned acreage would increase by 1990 over the current level and would double by 2030. The gradual increase in this alternative is more practical than more rapid program changes. The emphasis on timber and nontimber values will better fit the management plans to varying stand and market conditions.

Dispersed Recreation

This alternative is mid-point among the alternatives. The potential for public ownership of Iowa land is low due to the state's agricultural productivity and small forest base. An increase in program emphasis on private land recreation is justified, but will meet landowner resistance. The mid-level effort seems most appropriate.

Wildlife Habitat Improvement

Alternative 8 indicates the highest acreage of this measure. This is appropriate since wildlife values are rated very high in Iowa. Total forest acreage is low (1.5 million) and much of it is not marketable due to timber species, size and quality or location relative to markets.

Maintained Watershed Condition

This alternative stresses protection of woodland watersheds at a realistic level. This is another value considered higher than timber production on a portion of Iowa's forestland.

Reforestation

The increasing emphasis over present accomplishments would tend to increase net forest acreage, an important consideration with a shrinking forestland base.

Timber Stand Improvement

This alternative indicates very high accomplishment. This emphasis, assuming a cost-share practice for fencing hardwood forests from domestic livestock grazing, would be very desirable. Improved timber quality and increased production would result in areas with good markets. Watershed protection, increased recreational opportunity, and improved wildlife habitat would result.

Improved Watershed Condition

Accomplishment in this category would result from nonmarket incentives. Protection of existing forest from grazing, fire, insects, diseases and damaging logging and the planting of open land to forest would result in such accomplishments.

State Forest Resource Planning

Alternative 8 reflects a realistic reduction in planning requirements as first generation state plans are completed. Plan updating and refining should require fewer person years.

Forest Pest Management - Surveys and Technical Assistance

The increase of activity above current level would permit better monitoring. Federal assistance for pest management should remain available for state and private lands. National timber supply is of concern.

Cooperative Fire Protection

The relatively stable effort recognizes the need for federal support. Fire prevention activities and assistance to local fire departments would be considerably reduced in the absence of federal funding.

The support of a wide variety of multi-purpose protection and management activities geared to landowner objectives is a reasonable direction. It is reasonable for Iowa because of our high percentage of private land. It is reasonable for the nation for the same reason.

Research on both market and nonmarket areas, in coordination with forestry schools is desirable. As indicated earlier, the nonmarket values are often the more important in the public's thinking and in landowner decisions than market values.

Thank you for the opportunity to comment.

Sincerely,

Gene Hertel

GENE HERTEL
STATE FORESTER

GH/D2/sc

M-133

FISH & WILDLIFE
COMMISSION

HENRY S. FRITZ, JR., CADIZ
DR. WILLIAM H. FUNK, BOWLING GREEN
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DR. ROBERT C. WEBB, GRAYSON
PERSHING HAYES, TYNER

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF FISH & WILDLIFE RESOURCES
CARL E. KAYS, COMMISSIONER

PHONE 564-3400

March 13, 1984

U.S. Forest Service
Southern Region
1720 Peachtree Road, N.W.
Atlanta, GA 30367

RE: Draft EIS, 1985-2030 Resources Planning Act Program. USDA - Forest Service.

Dear Sirs:

Members of my staff have reviewed the above-referenced draft environmental impact statement. Accordingly, we offer the following comments and recommendations.

The Kentucky Department of Fish and Wildlife Resources (KDFWR) is charged with the protection and enhancement of all wildlife and fish species and their habitats in the Commonwealth of Kentucky. The long range goals and plans described in this draft EIS, are of importance to KDFWR since a large portion of our state is within U.S. Forest Service boundaries.

Of the nine (9) alternatives discussed, KDFWR finds four (4) completely unexceptable. These are Alternatives 1, 2, 5, and 9. These alternatives do not provide adequate protection to the resources to be managed and are particularly negligent concerning efforts toward fish and wildlife and wilderness areas. 33

All of the other alternatives (3, 4, 6, 7, 8) do put adequate emphasis on the management of fish and wildlife, wilderness areas, and recreational use. While Alternative 3 provides the most support for fish and wildlife, wilderness, and recreation, it is probably not feasible to do the economics of less timber and range production. However, as presented, Alternative 3 would be the preferred alternative by KDFWR. Alternatives 7, 4, 8, and 6 would be chosen respectively by KDFWR as plans best suited toward the protection and enhancement of fish and wildlife and their habitats and toward providing recreational opportunities to utilize these managed resources.

ARNOLD L. MITCHELL BLDG. #1 GAME FARM ROAD FRANKFORT, KY. 40601

Thank you for the opportunity to comment.

Sincerely,

Carl E. Kays
Commissioner

CEK/JDS/kh

cc: Peter W. Pfeiffer, Director, Division of Fisheries
Edwin F. Crowell, Assistant Director, Division of Fisheries
William D. Graves, Director, Division of Fisheries
Lauren E. Schaaf, Assistant Director, Division of Fisheries
Environmental Section Files

CHARLOTTE E. BALDWIN
SECRETARY

MARTHA LAYNE COLLINS
GOVERNOR

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
OFFICE OF THE SECRETARY
FRANKFORT, KENTUCKY 40601
TELEPHONE (502) 564-3350

April 2, 1984

Mr. John E. Alcock
Regional Forester
U.S. Department of Agriculture
Forest Service
1720 Peachtree Road, N.W.
Suite 804
Atlanta, Georgia 30367

Dear Mr. Alcock:

The Kentucky Natural Resources and Environmental Protection Cabinet, which has been delegated the responsibility to develop the Commonwealth's position on environmental documents, appreciates the opportunity to provide comments on the U.S. Department of Agriculture, Forest Service's Draft Environmental Impact Statement for the 1985-2030 Resources Planning Act (RPA) Program. We realize the importance of the RPA Program in assuring that the nation and Kentucky, in particular, possess adequate forest-related resources to meet the future demands.

After having reviewed this document, we recommend the following alternatives which we feel are in the best interest of Kentucky's forestry community.

1. National Forest System of Alternative 1 is preferred. This alternative provides for constant outputs through the year 2030 as measured by the 1982 level of goods and services. The National Forest System comprises approximately 12 percent of the nation's timber abd grazing land, and in view of this small percentage and the relatively limited long-range potential, we do not think national budgetary emphasis should be placed on the National Forest System. If increased emphasis is placed on State and Private Forestry, timber offered at current levels should be adequate. Also, a slight increase in recreation use, as described in this alternative, should be adequate.

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2. State and Private Forestry of Alternative 2 is preferred. State and Private Forestry programs under this alternative would be accelerated to meet the highest timber and range production goals indicated in current State Forestry Resource Plans. State and private forest lands represent the majority of forest lands in the United States, and if emphasis is directed toward these lands, the potential returns on investment are relatively greater than they would be on National Forest lands or Research investments.

Federal technical, and particularly financial assistance, should be expanded to increase and protect the volume of timber produced on State and private forest lands. If Alternative 1 were adopted for the National Forest System, technical and financial assistance could perhaps be increased above levels indicated in Alternative 2. Of particular concern to the Kentucky forest community is the apparent lack of consideration given to hardwood protection in the 1985 RPA. With existing technology, demands on hardwoods will be increasing, in some instances, replacing softwoods for reconstituted wood products and building materials. We therefore request that further consideration be given to hardwood production in your future planning.

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We strongly back this alternative's expanded assistance to loggers and processors which will encourage more complete and efficient utilization of the timber harvested. State and Private Forestry funds for this activity were almost eliminated in Fiscal Year 1984. The total Rural Forestry Assistance funds received in Kentucky for FY '84 were only $107,000. Unlike other forestry practices, this assistance will immediately increase usable wood volume. Increased emphasis on fire control assistance to the State and Private Forestry Program would be most beneficial to Kentucky's forested lands, but Rural Fire Prevention and Control funds have noticeably decreased in recent years. State Forest Resource Planning would also aid in efforts to better manage private and State lands in Kentucky.

3. Research of Alternative 1 is preferred. Research needs have been met in the past. This alternative would continue constant level and provide a mix of programs outputs. No need for an increase in the research program is foreseen but a decrease in research could be deterimental to forestry in Kentucky. We also suggest an increased emphasis in hardwood-related research in comparison to softwood-related research due to Kentucky's predominantly hardwood resource base.

We would appreciate receiving a copy of the Pinal EIS when it is available. If you have any questions about our comments, please contact Ms. Valerie A. Wickstrom cf my staff at (502) 564-3350.

Sincerely,

Charlotte E. Baldwin

Charlotte E. Baldwin
Secretary

CEB/jes

M-136

STATE OF MICHIGAN

NATURAL RESOURCES COMMISSION
THOMAS J. ANDERSON
E. R. CAROLLO
MARLENE J. FLUHARTY
STEPHEN F. MONSMA
O. STEWART MYERS
RAYMOND POUPORE
HARRY H. WHITELEY

JAMES J. BLANCHARD, Governor

DEPARTMENT OF NATURAL RESOURCES
STEVENS T. MASON BUILDING
BOX 30028
LANSING, MI 48909

RONALD O. SKOOG, Director

April 17, 1984

Regional Forester
U.S. Forest Service
The Henry S. Reuss Federal Plaza
310 West Wisconsin Avenue
Milwaukee, Wisconsin 53203

Dear Sir:

Thank you for the opportunity to review the Draft Environmental Impact Statement (EIS) for the Resources Planning Act Program.

It is difficult to evaluate your alternative programs in the Draft EIS. If the mission of the Forest Service is clearly stated, there should be definite decision criteria for evaluating alternative programs. These should be included. The "resources" affected by each alternative are not, in fact, resources. For example, recreation is a desired use of the resource, whereas, wilderness is a land condition, presumably for a certain kind of recreation use or experience. The resources are vegetation, water, fish, wildlife, soil, and minerals. Soil is not listed, and the impact of the alternatives on this resource was not evaluated. The "listed resources" are a mixture of outputs, resources, uses, and land conditions. This is confusing to me and to the public. If the planning process is issue driven and if the role of government is to benefit people, the program should focus on the uses of the National forests. Uses should be prioritized based on criteria--such as importance to the nation's welfare, alternative sources, etc. Once you have done this, alternatives can be developed and evaluated on how well they meet the demand for the uses of the National forests.

Another aspect missing in the EIS is the concept of maximum net benefit. If National forests exist for the benefit of society, then they should be managed to produce the maximum net benefit. This would be a better measure of the suitability of Forest Service programs than present net value. Perhaps a couple of examples will illustrate this point. Michigan has a deer herd. There are many benefits of this deer herd--the recreation it provides results in social benefits to the participants, and economic benefits to society. Included in this is the value of the meat, hides, and tails. But this herd costs something too. It costs money to maintain the herd at a given level, and it costs in terms of crop damage and car-deer accidents. Ideally, the herd should be kept at a level that results in the maximum net benefit (total

benefits-total costs) to society.

Forests are being used for grazing--which helps our economy, but heart disease (caused in part by eating too much red meat and fat) is a serious problem in the United States. The Forest Service is contributing to this problem by encouraging the production of more meat. This is a "negative" benefit of grazing. What is the net benefit of grazing considering the cost in heart disease, soil erosion, and compaction, competition with wildlife, etc.? If meat is needed for society, let it be deer and elk meat. This meat is very low in cholesterol compared to beef, and the "negative benefits" of eating wild meat is less than eating beef. In addition, there are more positive benefits from raising deer and elk instead of beef. Deer and elk provide both hunting and appreciative uses of the National forests which result in great economic benefits. Perhaps there are some uses of National forests that are inappropriate because the costs exceed the benefits or maybe the net benefit is very small.

You are attempting to meet the demand for timber and wood fiber, yet it may be more cost-effective to spend time and funds reducing consumption. For example, there are other alternatives for building construction besides wood. Also, when we shop we buy a product in a plastic bottle that is housed in a cardboard carton and carried home in a paper bag. The "excess packaging" not only puts extra demand on the forests, but also poses a solid waste disposal problem, a negative benefit. We should not blindly try to meet the demand for harvesting forest products without determining if it would be more profitable to reduce consumption.

Your program is nationwide in scope, but the way it is subdivided by regions can cause turfism; i.e., "territorial voting" for an alternative rather than an objective evaluation of each alternative.

Given "wise use" and ecologically sound management, the best program is that combination of alternatives that produces the greatest maximum net benefit. To me, trying to meet demand for excess packaging and contributing to heart disease hardly seems wise use of the National forests.

Your goal for fish and wildlife is not strong enough. It sounds like "we will do something to help wildlife if it does not conflict with other land uses." The goal should be to produce viable populations of all species to meet public demand.

The Forest Service should be commended for taking a leadership role in land management planning and for developing analysis tools. Yet there is the need for a clearer picture of the role of National forests in American society and how we can influence the use of these resources for the long-term benefit of American citizens.

Your program alternatives three, four, six, and seven appear to me to be the best. However, four and six stress "range" too much. If every alternative meets public demand and is ecologically sound, then alternative seven appears appropriate, as it appears to be the most cost-effective option.

Sincerely,

Charles J. Guenther, Chief
Wildlife Division
517-373-1263

CJG:DT:pj
Enclosure

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MICHIGAN DEPARTMENT OF STATE

RICHARD H. AUSTIN SECRETARY OF STATE

LANSING
MICHIGAN 48918

MICHIGAN HISTORY DIVISION

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STATE ARCHIVES
3405 N. Logan Street
517—373-0512
STATE MUSEUM
208 N. Capitol Avenue
517—373-0515

March 12, 1984

Regional Forester
Henry S. Reuss Federal Plaza
310 West Wisconsin Avenue
Milwaukee, WI 53203

Re: ER-7188
RPA '85 EIS

Dear Sir:

The Michigan History Division is the State Historic Preservation Office in Michigan. Our office has reviewed your RPA '85 Draft Environmental Impact Statement, with primary attention to the potential impacts on cultural resources. We have a few general comments before commenting on each of the nine alteratives.

First, nowhere in the document is mention made of provision for avoiding damage to Native American religious sites. Such measures would be necessary to comply with provisions of the American Indian Religious Freedom Act (92 Stat. 469; 42 U.S.C. 1996) and the Archaeological Resources Potection Act of 1979 (93 Stat. 721; 16 U.S.C. 470aa-11). Potential impacts on traditional religious sites and pratices ought to be at least mentioned in the "Social Effects" and "Civil Rights, Minorities and Women" sections.

Secondly, there is an unfortunate tendency in the assessments of cultural resource impacts to regard very serious and massive impacts as beneficial. The reasoning seems to be that increased knowledge of cultural resources gained by inventory and mitigation outweighs the loss of those resources. We would maintain that such reasoning is no more valid than it would be if applied to endangered species. This attitude misses the entire point of cultural resource management, which is to avoid the necessity of mitigation. Just as a responsible doctor would prefer to have a live patient over an autopsy report, we would prefer a significant site preserved for the future over the grandest sort of excavation or architectural recording.

Finally, a study which is focused on cost estimates ought to take into account the costs of cultural resource management. This was perhaps done, but since the figures were not listed separately, they could not be reviewed. The costs of mitigation are high. It is not unusual for an archaeological excavation to cost $100,000. If one of the alternatives involving the largest amounts of disturbed acerage is selected (i.e., Alternates 2, 4, or 9), total cultural resource management costs could easily reach several million dollars per region to cover survey, testing and mitigation. If these costs have not been included in the RPA tables, they might be enough to alter the ranking of some of the alternatives in terms of cost-benefit ratios.

MH-69

We have these more specific comments on cultural resource assessments for each alternative:

Alternative 1 (Constant Outputs)
Seems to be an accurate assessment. Gradual increase in inventory will allow better assessment of resource significance, resulting in reduction of number of resources to be avoided.

Alternative 2 (High Market)
Cultural resource management (CRM) costs rise with the great increase in disturbed area. One mitigation project can equal the cost of an entire season of inventory. CRM staff and budget for contracted CRM work would have to increase greatly if delays are to be avoided. Some resources are bound to be lost, either through error or partial mitigation.

Alternative 3 (High Nonmarket)
The threat of vandalism and damage due to foot or vehicle traffic would increase. The lesser degree of large scale soil disturbance (as compared with most other alternatives) is desirable.

Alternative 4 (High All Resources)
Agree with assessment.

Alternative 5 (Reduced)
Agree with assessment. The problem would be more serious in the west, where large scale vandalism and greater erosion threats are more common. In the east, this alternative would be harmful if CRM staff and budget were reduced below the level needed to meet compliance requirements.

Alternative 6 (Implement Plans)
Ideally, the inventory should be supplemented with studies recommending criteria for evaluating site significance. The potential for adverse effects is rather high.

Alternative 7 (High Present Net Value)
The amount of disturbed acreage is smaller than for Alternative 2, suggesting a lesser potential for adverse impacts.

Alternative 8 (1980 RPA)
Agree with assessment.

Alternative 9 (High Productivity)
Very high potential for adverse impacts made this the least desirable alternative from a CRM point of view. Rapid inventory and increased funding are not an advantage if accompanied by site destruction and hurried evaluations of site significance. A large percentage of the cultural resources on USFS lands could be destroyed by 2000. This is an irretrievable loss.

None of the proposed alternatives seems ideal for the protection of cultural resources. Alternatives 1 and 5 present the least potential for adverse impacts, but because of funding constraints seem to allow for no improvements in the present way of managing these resources. Alternatives 2, 4, 6, 8, and 9 all carry with them the threat of greatly increased chances of adverse impacts. From our point of view, Alternatives 3 and 7 offer the best balance between potential site loss and an adequate resource management program. Nevertheless, whatever alternative is chosen, the protection of cultural resources will be dependent on adequate staffing, budget, and the attitude of decision makers within the U.S. Forest Service. **33**

Thank you for this opportunity to comment. We look forward to seeing the final EIS and learning which alternative is selected.

Sincerely,

Martha M. Bigelow, Director
Michigan History Division
and
State Historic Preservation Officer

MMB:BEM:jl

STATE OF MINNESOTA
DEPARTMENT OF NATURAL RESOURCES

BOX 9 . CENTENNIAL OFFICE BUILDING • ST. PAUL, MINNESOTA • 55155

DNR INFORMATION
(612) 296-6157

FILE NO.

April 5, 1984

Mr. Larry D. Henson
Regional Forester
USDA Forest Service
Eastern Region
The Henry S. Reuss Federal Plaza
310 W. Wisconsin Avenue
Milwaukee, WI 53203

Dear Larry:

Enclosed are our comments on the 1985 RPA Assessment Supplement and Program.

We were pleased to see a Program alternative (number 6) based on State Forest Resource Plans and National Forest Land Management Plans. This alternative builds upon the extensive amount of resource and program analysis that has been done as part of state and National Forest planning efforts, and is a positive addition to the range of alternatives presented in earlier RPA Programs. Our comments reflect some concerns, however, about the way alternative 6 appears to have been developed.

Thank you for the opportunity to comment on these documents.

Sincerely,

Raymond B. Hitchcock, Director
Division of Forestry

RBH:la
Enclosure

EXCERPTS FROM DNR'S COMMENTS ARE INCLUDED HERE. THE FULL SET OF COMMENTS IS AVAILABLE IN RPA FILES.

cc: Tom Schenarts

AN EQUAL OPPORTUNITY EMPLOYER

M-140

Minnesota DNR, Division of Forestry Comments
on the 1985 RPA Assessment and Program

The Forest Service should be commended for addressing the State and Private Forestry (S&PF) sector in considerable detail and separately from the National Forest System (NFS) in the 1985 RPA documents. The private sector and the states will be required to meet over half of the needs for timber and most other renewable resources in the future. If shortfalls occur in the NFS supply of resources, it is mainly private landowners that will be required to make up the deficit. Neither the private forest sector nor the NFS alone can provide the timber and other resources needed by the nation, but the private and public sectors working together can meet future needs.

Our analysis focused on the S&PF portions of the RPA documents. Before presenting this analysis, however, we would like to comment on specific alternatives presented in the Program document. Later in our analysis we comment on how well the program alternatives respond to the Assessment's supply and demand projections relative to state and private land.

Comments on Specific Alternatives in the Program

Alternatives 1 and 5 fail to respond to the Assessment findings. These alternatives propose constant or decreased outputs as a response to decreasing demands. 36

Alternative 9 should be rejected. It shortchanges future generations to increase present timber harvests. There is no guarantee that the recreation user fee system or increased timber management investments that this alternative is based on will be forthcoming.

Alternative 6—implementing National Forest and State Forest Resource Plans (SFRP's)-- sounds like a good idea. However, we doubt that this alternative as presented is actually an aggregation of the preferred approaches from National Forests and states. First, only a handful of National Forest plans are available. Second, based on the SFRP's we have seen it would be almost impossible to identify and add up S&PF program costs and outputs because of 41

the varying formats. Third, given planners' optimism as to future budgets and outputs, it's hard to believe that the summation of National Forest and state plans would not result in costs and outputs significantly higher than alternatives 7 and 8. In fact most of the graphs, charts, and tables show alternative 6 as a mid-level alternative. What might actually have happened is that since most National Forest and state plans were not available when alternatives were developed, the disaggregated targets from the 1980 RPA Program were substituted as the "preferred" approach in National Forest and state plans. This is logical since all National Forest plans have to include 1980 RPA targets as one of their alternatives. It would also explain why alternatives 6 and 8 are so close in terms of costs and present net value.

We do not agree with the market versus non-market dichotomy of alternatives 2 and 3. The Multiple Use-Sustained Yield Act includes requirements to utilize resources in the combination that best meets the needs of the American people, with consideration of the relative values of the resources, not necessarily the combination of uses that gives the greatest dollar return or unit output. The market and non-market alternatives discriminate for or against certain uses primarily on the basis of "dollar return" (although this is difficult to see in the output tables). Alternative 2 should be rejected if the output targets were changed as alleged by Randal O'Toole in his article in the Jan-Feb. 1984 issue of Forest Planning. O'Toole also makes what we consider to be valid criticisms about supply and demand curves, economic evaluation of alternatives, and the effects of "mitigation" measures on some outputs. Alternative 4 appears superior to either 3 or 2 in most respects. 39 45

In general, alternatives 4, 6, 7 and 8 are acceptable. In fact it is difficult to choose among them given the imprecise nature of long term planning. If alternative 6 was a true aggregation of National Forest Plans and State Forest Resource Plans, we would prefer that alternative. We only hope that the alternative that is finally selected as preferred bears some resemblance to one of the alternatives presented in the Program. We don't need another recommended Program like 1980 with upper and lower bounds and no resemblance to any of the draft alternatives.

Once a preferred alternative is selected it deserves some backing and at least an attempt should be made to develop budget requests that are in line with the Program. The annual reports to Congress required by the RPA should receive wider distribution. The reports should clearly state the difference between the recommended Program and the actual budget and list targets that are not being met. 42

Adequacy of Assessment Analysis for State and Private Lands

We have two general comments on the Assessment and Assessment Supplement: (1) The long-run supply and demand projections for timber and outdoor recreation in the 1979 Assessment and 1984 Assessment Supplement were much more adequate than those for the other resources. (2) It is hard to believe that the 1979 Assessment supply and demand projections for water, forage, outdoor recreation and wilderness, and wildlife and fish could not have been improved in the Assessment Supplement based on new information and better projection methodologies developed over the past five years (see p. 1, Assessment Supplement). 40

Adequacy of S&PF Elements in the 1985 RPA Program Goals and Issues

The nine goals listed in the 1985 RPA Program are national, single-purpose goals. The question asked in the SAF Position Paper, "Comments on Alternative Goals for the 1985 RPA Program of the Forest Service, USDA" is still relevant: "There is also a question of how national, single-purpose goals will fit regional and state resource situations. Will there be an opportunity to disaggregate the program and restructure goals to fit regional and state resource levels?" In addition, as the SAF Position Paper stated, the goals for "S&PF programs in the Forest Service are not well laid out or presented--they are buried in the goals and programs in such a way that no clear picture of their substance or importance is evident." None of the goals or accompanying text on pages 1-11 through 1-20 of the Program provide enough information regarding how much of each goal would be applied to nonindustrial private forests, state lands, or the industry sector. In the range and outdoor recreation goal statements and accompanying discussion, there is not even a clear reference to state and private lands. 38

Effectiveness of the Response of the Program Alternatives to the Assessment's Supply and Demand Projections

We have one general comment on the scope of the Program alternatives. None of the alternatives display decreasing, constant, or slightly increasing NFS program outputs and costs with greatly increased S&PF program outputs and costs. Under alternatives 2 and 6, S&PF total costs would rise to about 10 percent of NFS total costs by 2030. Under other alternatives the percentage of S&PF to NFS costs would be slightly to much lower. If more than half of the nation's forest and range land is in state and private ownership and many of the best investment opportunities are on these lands, then at least one alternative should have included a very substantial percentage of the Forest Service budget going to S&PF programs. 31

Consistency of S&PF Program Treatment Across Resource Areas and Alternatives

1. Why are S&PF soil and water outputs highest under alternative 2 (High Market) (p. 2-12)? They should only be at "economically efficient" levels according to the alternative description on p. 2-10. Presumably alternative 3 (High Nonmarket) should have higher output levels, but it actually has much lower levels.
2. A comparison of tables L.2B and L.3B (Appendix L) shows that nonmarket outputs (recreation, wildlife habitat improvement, watershed condition) are far lower under alternative 3 (High Nonmarket) than under alternative 2 (High Market). This seems inconsistent, since presumably nonmarket outputs should be higher under alternative 3.
3. The statement on p. 2-20 that market and nonmarket outputs attributable to the S&PF program would be moderate under alternative 4 (High All Resources) is inconsistent with the alternative description on p. 2-18, which calls for high output levels of market and nonmarket resources. A comparison of tables L.2B and L.4B (Appendix L) shows that all market and nonmarket outputs except wildlife habitat improvement are lower or much lower under this alternative than under alternative 2 (High Market). Presumably market outputs under alternative 4 should be about the same as under alternative 2, and nonmarket outputs should be higher (not lower) under alternative 4 than under alternative 2.

March 15, 1984

Mr. John E. Alcock
Regional Forester
1720 Peachtree Road, NW
Suite 804
Atlanta, GA 30367

Dear Mr. Alcock:

As the state agency charged with conserving and managing Mississippi's wildlife resources, the Department of Wildlife Conservation is vitally concerned with Forest Service operations in our state, which include the management of more than 1,000,000 acres of National Forest land. In this light, we have reviewed the Draft Environmental Impact Statement for the 1985 Resource Planning Act Program.

Of the nine alternatives for Forest Service activities described in the draft program statement, the Department of Wildlife Conservation prefers Alternative 3 (High Non-Market). This alternative emphasizes high output levels of water, wildlife, fish, recreation and other non-market resources yet maintains output of market resources (timber, minerals, grazing) at economically efficient levels. A particularly attractive attribute of Alternative 3 is that benefits are projected to exceed costs 300 percent by year 2030.

Before finalizing the recommended program, we would like the Forest Service to specifically address two concerns we think have a significant impact on wildlife populations on National Forests. These concerns are hardwood conversion and road construction.

Present Forest Service projections show a decreased future demand for softwood products, yet conversion of hardwood and pine/hardwood stands to more economically efficient (i.e. pure pine) stands continues. While we recognize that pine stands can provide excellent wildlife habitat, we would like a significant hardwood component retained for diversity wherever possible.

In our experience, we have found that an extensive system of all-weather roads has an adverse impact on game populations; specifically deer and turkey. Certainly some amount of permanent road is necessary on National Forests for recreational access and timber harvest, yet upgrading temporary logging roads to permanent status exposes wildlife to increased disturbance and illegal kill and complicates

9

BILL ALLAIN
Governor

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Lonnie E. Tadlock
Morton, MS

A. G. Williams
Osyka, MS

LON STRONG
Executive Director

M-142

law enforcement activities. We would recommend gates or water bars be erected on unimproved and dead-end roads. This would restrict vehicular travel but still provide access to the serious recreationist.

Thank you for the opportunity to comment on these matters and the 1985 RPA program. We remain committed to working with the Forest Service in wise management of our wildlife resources.

Sincerely,

Lon Strong
Executive Director

/ce

M-143

MISSISSIPPI FORESTRY COMMISSION

SOUTHERN HARDWOOD — SOUTHERN PINE

March 7, 1984

MAR 12 1984

Mr. John E. Alcock
Regional Forester
1720 Peachtree Rd NW
Suite 804
Atlanta, GA 30367

Dear Jack:

We have reviewed the Draft Environmental Impact Statement (DEIS) for the 1985-2030 Resources Planning Act Program. Following are our preferred alternatives by opportunity area:

	Alternatives		
Opportunity Areas	NF	S&PF	Research
Timber	6	6	6
Range	9	6	6
Recreation	6	6	6
Wilderness	2	-	6
Wildlife & Fish	6	4	6
Minerals & Energy	6	5	6
Water	6	6	6
International Forestry	6	-	6
Protection and Support	6	2	6

Sincerely,

Robert S. Moss

Robert S. Moss
State Forester

RSM:jn

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MISSOURI DEPARTMENT OF CONSERVATION

MAILING ADDRESS:
P.O. Box 180
Jefferson City, Missouri 65102-0180

STREET LOCATION:
2901 North Ten Mile Drive
Jefferson City, Missouri

Telephone 314/751-4115
LARRY R. GALE, Director

April 5, 1984

Mr. Larry Henson, Regional Forester
United States Forest Service
310 W. Wisconsin Avenue
Milwaukee, WI 53203

Dear Mr. Henson:

Department staff have completed their review of the Draft Environmental Impact Statement on the 1985 RPA Program. Given our resource responsibilities, we are concerned that future Forest Service management of the Mark Twain National Forest and programs for Missouri's private forest landowners reflect the optimum beneficial use of the fish, forest and wildlife resources. We work closely with the Forest staff to that end and appreciate their continued cooperation.

We believe that Alternative 8 (1980 RPA), to manage "all resources at a high level while maintaining the productivity of the land," is the preferred selection. Such would ensure proper land and resource utilization.

Thank you for the opportunity to review and comment.

Sincerely,

Larry R. Gale

LARRY R. GALE
DIRECTOR

cc: Mr. Leon Cambre

COMMISSION

JEFF CHURAN, Chillicothe
CARL DISALVO, St. Louis
JOHN B. MAHAFFEY, Springfield
RICHARD T. REED, East Prairie

MISSOURI DEPARTMENT OF NATURAL RESOURCES
P.O. Box 250 Rolla, Missouri 65401 (314) 364-1752

M-144

April 9, 1984

U. S. D. A. Forest Service
310 West Wisconsin Avenue
Milwaukee, WI 53203

Gentlemen:

The following remarks have been prepared following our review of the DEIS for the 1985 RPA Program.

A. General Comments

The respondent's main areas of interest in the Draft Environmental Impact Statement for the 1985 Resources Planning Act Program are Minerals, Water, Recreation, and Wilderness. All are related in large degree to the functions and responsibilities of the Missouri Geological Survey.

Before addressing the nine alternatives in the DEIS, we would like to comment briefly on the 1979 Assessment of the Forest and Range Land Situation in the United States, FS-345, Jan. 1980. The natural resources situation described in the assessment is stated to be a principal basis for program management decisions. The Minerals sections in Part 1, p. 73-85, most concerns us. Here information is given on mineral production values in the north, north central, south, and south central states in 1950, 1960, 1970, and 1975. However, no attempt was made to detail what share and what commodities were actually produced in the National Forests themselves. The text and maps indicate that there are large reserves of coal, radioactive minerals and oil shales in the National Forests. Likewise, about half the Nation's copper, lead, zinc, nickel, and molybdenum are said to be contained in these lands. Again, some specific production data from operations in the National Forests would make these statements much more meaningful. The Geographic Distribution maps, figures 2.4 and 2.5, give no quantitative data. The same criticism applies to U. S. acreages utilized by mining and reclaimed, from 1930 to 1971, taken from U. S. Bureau of Mines IC 8642 (1974). No attempt was made to focus on mining in the National Forests. Furthermore, the Federal Surface Mining Control and Reclamation Act

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Christopher S. Bond Governor
Fred A. Lafser Director

Division of Geology and Land Survey
Wallace B. Howe Director

of 1977, P. L. 95-87, became law in August of that year. This mandated that from here on all surface coal mines would be carefully reclaimed. In addition, mined-land reclamation laws covering a variety of mineral commodities had been enacted in most of the important mining states by that time. While some useful informationis presented in tables 2.12 and 2.13, subsequent events tend to reduce their validity. The forecasts of mineral production and demand given in table 2.11 would be much more meaningful if the actual and potential supplies from the National Forests were in some way identified.

B. Comments on Sections in Chapter 1 of the DEIS RPA 1985

1. Minerals, p. 1-10. Suggested addition to last sentence: Availability depends on competitive production costs, international political climate, etc.

2. Wilderness Opportunity Area, p. 1-14 & 1-15. We strongly endorse the goals and opportunities expressed here.

3. Minerals and Energy Opportunity Area, p. 1-16. Suggested addition to final sentence under Goal: Emphasize energy minerals and minerals of strategic and critical importance.

COMMENT: The goals and opportunities outlined here are excellent and supportive of efficient exploration, development and reclamation in potential mineral resource areas. Critical minerals like iron, lead, zinc, copper, molybdenum, and barite are more common than the strategic minerals, but are often equally essential to industry.

4. Issues, p. 1-21, Item #3. "How can the National Forests contribute to meeting the increased demand for mineral and energy development?" The reader is referred to Chapter 2, Minerals and Energy, p. 2-68. In the section under National Forest System, the potential national importance of mineral resources is emphasized. However, these statements suffer from lack of documentation, a correctable deficiency pointed out in comments above about the 1979 assessment. In the third paragraph, the most supportive Alternatives are 2, 6, 8, and 9, not 4, 5, and 6 as shown in the text.

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C. Comments on the Nine Alternatives Described in Chapter 2

Alternatives 1, 3, 5, and 8 are rejected, largely because they afford reduced output levels, and give insufficient emphasis on mineral resources activities. It is more difficult to single out a favored Alternative among the five remaining Alternatives.

Under Alternative 4 (High All Resources), p. 2-18 to 2-21, there is a good balance of outputs of both market and non-market resources. The statement that minerals exploration and development would be facilitated through increased access and timely processing of applications makes this perhaps the most attractive. However, there appears to be little difference in most respects between Alternative 4 and Alternatives 2, 6, 7, and 9. Alternatives 2 and 9 in particular are about equally endorsed.

We found the task of analyzing the Nine Alternatives very difficult and time-consuming; and likely to discourage public input. There is such a diversity of conditions and potential uses and products from the National Forest System, that any descriptions and catagorizations are bound to be complex and difficult to follow. Fortunately, we will be able to comment this summer on the DEIS for the Mark Twain Forest Plan. We will be much more at home in that task.

We appreciate the opportunity of reviewing the DEIS for the 1985 RPA management plan.

Yours truly,

Wallace B. Howe

Wallace B. Howe
Director and State Geologist
Div. of Geology and Land Survey

M-145

STATE OF NEVADA
DEPARTMENT OF WILDLIFE
1100 Valley Road
P.O. Box 10678
Reno, Nevada 89520-0022
(702) 789-0500

RICHARD H. BRYAN
Governor

WILLIAM A. MOLINI
Director

February 7, 1984

Mr. J. S. Tixier, Regional Forester
United States Department of Agriculture
Forest Service
324 25th Street
Ogden, UT 84401

Dear Stan:

Thank you for your letter of January 16, 1984 which provides our agency an opportunity to comment on the Draft Environmental Impact Statement for the Resources Planning Act Program of 1985. As you are aware, we are extremely interested in all long-range plans of the U.S. Forest Service, particularly as they relate to the future management of the fish and wildlife resources.

The draft EIS has addressed the potentials and direction of a long-range national forest plan. Of course, the primary emphasis and interest of this agency is more constrained both in terms of geographic region and components of the forest environment. The main emphasis of the document is on the larger forest industry of wood and wood products development and production. Nevada has only a limited forest products industry. Our concern lies in the area of wildlife and fisheries, particularly as they are components of a recreation industry in the nation's and Nevada's forests.

Relatively little difference exists between the nine alternatives with respect to wildlife and fisheries values. We lean toward those options that optimize the long-term maintenance and improvement of wildlife and fisheries values. Nevada relies heavily upon recreation as a major industry. Clearly, then, we favor long-term planning that supports and augments recreational use of the national forests in our region and state. Wildlife and fisheries are very important components of the recreational mix that Nevada has to offer.

Sincerely,

Willie

William A. Molini
Director

FRK:pw

Division of State Lands
State Land Office
State Land Use Planning Agency
(702) 885-4363

5089

Address Reply to
Division of State Lands
201 S. Fall Street
Capitol Complex
Carson City, Nevada 89710

STATE OF NEVADA

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

Division of State Lands

April 6, 1984

Forest Service
U.S. Department of Agriculture
Federal Office Building
324 25th Street
Ogden, Utah 84401

SUBJECT: Comments on RPA 1985 Program Draft Environmental Statement

Dear Sir:

Following our review of the RPA 1985 Program Draft Environmental Statement, we would like to make the following comments. The comments are general in nature, since the DEIS itself is general and not site specific or state specific. Our comments were developed with a view of how the National Forests in Nevada could best be managed for the benefit of Nevada.

Of primary importance to Nevada and its economic well-being are tourism, rangeland resources and mineral development opportunities. The National Forests contain fine grazing areas for livestock use. Continued availability of these areas for livestock production should be included in the RPA Program in the future. Enhancement of rangeland conditions to increase grazing levels where appropriate should also be promoted. Range improvements, if properly planned and implemented can increase livestock production and also be of benefit to wildlife.

Mining is important to many rural areas of Nevada and the output of the minerals found in Nevada are of significant benefit to the nation as a whole. The National Forest areas in Nevada contain many areas considered to have high or moderate mineral development potential. It is important that areas having mineral potential be kept accessible for mineral exploration. The RARE II wilderness process now underway includes some roadless areas which are considered by the mining industry to have significant mineral potential. Promotion of wilderness designation for such areas should be done with extreme caution and through careful evaluation of resource values. Additional wilderness areas in Nevada most likely will be designated; however, care should be exercised to prevent designation of areas which have mineral resource values in excess of recreational and wilderness values.

Potential energy resources should likewise be kept open and available for exploration and development.

Recreational opportunities offered by National Forests will become increasingly important in the future. Nevada, while having extensive "wide-open spaces" is an urban state with a large majority of the population living and working in urban areas. This large urban population creates increased demands for outdoor recreational opportunities. Tourism is the keystone of Nevada's economy, with visitors seeking the

night-life Nevada offers, but increasing numbers of tourists are seeking outdoor recreation. The Forest Service should continue an active role in developing outdoor recreation facilities such as campsites, trails, and ski areas throughout the National Forests in Nevada. Such facilities will benefit rural communities by increasing tourism.

Wilderness experiences are also sought by many Nevadans and visitors. Areas of the National Forest which are suitable for wilderness designation because of pristine wilderness values and primitive recreational opportunities should be considered and promoted as wilderness areas. Resource conflicts should be minimized.

Overall, the State generally supports activities which tend to increase revenues from Forest Service lands as this benefits the nation as a whole but also provides economic opportunities for rural communities in many areas of the nation. Production emphasis, however, should not disregard aesthetic, recreational, wildlife, and other natural values. These values must be protected and enhanced where feasible. Timber demand for the nation, as an example, should be met. This can be accomplished in conjunction with supply from private lands, as various alternatives in the DEIS suggest; however, any alternative which unduly restricts the capacity of the National Forests to meet timber demands should be avoided. Likewise, mineral lands must remain open and available for mineral exploration and development.

A resource in Nevada that has not been adequately evaluated and utilized is the pinyon-juniper forests found in many areas of the State. An increased emphasis toward beneficial utilization of this resource should be made by the Forest Service.

As a final note, in all Forest Service alternatives attention must be given to fish and wildlife values. Increased productivity of the Forest Service lands can be accomplished without undue impact of fish and wildlife resources and their habitat. Multiple-use and resource enhancement should be the overall goal of the Resources Planning Act Program for the National Forests in Nevada and the United States.

An evaluation of the alternatives presented in the DEIS suggests that Alternative 6 (Implementation of National Forest Land and Resource Management Plans, State Forest Resource Plans, and Research Program Plans) may be the best alternative for the proper management of National Forests in Nevada. Alternatives which unduly restrict productivity should be avoided.

Thank you for considering our comments.

Sincerely,

Pam B. Wilcox

Pamela B. Wilcox
Administrator

PBW:JMD:js

cc: Robert M. Larkin
Toiyabe National Forest

M-147

State of New Hampshire
Department of Resources and Economic Development
DIVISION OF FORESTS AND LANDS

105 Loudon Road, Prescott Park, P.O. Box 856, Concord, N.H. 03301
Theodore Natti, Director Tel. (603) 271-2214

March 27, 1984

Mr. Thomas Schenarts, Area Director
U. S. Forest Service - NEA - S&PF
370 Reed Road
Broomall, Pennsylvania 19008

Dear Tom:

After review of the RPA Draft Environmental Impact Statement, the following comments are offered:

Alternative Six, developed from National Forest System and State Forest Resources Plans, seems to represent a moderate and thoroughly reasonable approach to resources programs through the planning period. Several factors would argue for favoring this alternative - 1) State Forest Resources Plans and National Forest Systems Plans made heavy use of public involvement and have, therefore, already been selected as adequately serving a broad constituency; 2) the alternative would be an aggregate of local data and local conditions, which again should result in a practical overall program; 3) National Forest Systems Plans and State Forest Resources Plans represent countless hours of professional analysis and tremendous financial investment. One would question the justification for a major departure from their direction.

Most alternatives, including number six, allocate a gradually increasing share of the total Forest Service budget to State and Private Forestry. This is entirely in accord with our belief that government should encourage the potential of non-industrial private forest lands.

A final comment pertains to hardwoods. Pages 3-5 calls attention to substantial hardwood growing stock inventories, particularly in the East, and notes that seventy percent are on non-industrial private ownerships. Further, only eight percent of the hardwood inventory is located on National Forest Lands. For whatever reason, the RPA does not seem to allocate sufficient resources toward releasing the potential of hardwoods. **30**

Thank you for the opportunity to respond to this document.

Sincerely yours,

Theodore Natti

Theodore Natti
Director

TN:cw

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NEW MEXICO STATE UNIVERSITY

March 30, 1984

03.18 HASSELL.RPA

Mr. M. J. Hassell
Regional Forester
Southwestern Region
Federal Building
Albuquerque, New Mexico 87102

Dear Mr. Hassell:

This letter is to serve as comment on the 1985-2030 Resources Planning Act (RPA) Draft Environmental Impact Statement (DEIS). We recognize the mandate for this DEIS as given in the amended RPA. However, the document, which covers management of national forest lands in the entire U.S., is so general and broad in scope that it is rather difficult for us to make specific informed comments.

We support the stated national goals presented on pages 2-4 with some modifications. It appears throughout the document that the primary emphasis of management is timber production. We believe management should emphasize multiple use and will now address the specific goals of each resource opportunity area. **39**

Timber Opportunity Area (page 1-11). The goal for the "Timber Opportunity Area" on page 1-11 implies that the nation's increased future demand for lumber should be met by increasing timber harvests on national forest properties. While we agree that some increase in harvests from public lands will be necessary, we question if increases of the magnitude proposed in six of the nine alternatives are warranted. In the 1983 Yearbook of Agriculture, USDA, Hall presents data showing that of all forested land in the U.S. only 18 percent is federally controlled. The vast majority (73 percent) of our forested land base is owned by commercial forest product interests and private landowners. Projected lumber demand for 1990 is 18.8 billion board feet (Hall 1983). The data for alternatives presented on page 6 would have the national forests supplying from 59 percent to 85 percent of the total U.S. demand for timber supplies. While 60 percent of demand may be realistic, 85 percent, in our opinion, is not desirable, realistic or necessary. We believe this is particularly true in light of the present plight of timber cutters in the northwest who are attempting to be "rescued" from overbid contracts.

On page 1-12, three major ways to respond to increasing demands for timber are presented. We believe that one important method has been omitted. This method would be to increase the output of timber products from commercial timberlands and private acreages which combined represent 73 percent of the nation's forest lands and a majority of the most productive land (Hall 1983). This would not only help meet short-term increased demand for timber, but would allow the publicly-held national forests to extend inventories through continued growth and regeneration. This lack of recognition by the U.S. Forest Service of the importance of private stocks is evidenced by a quote from page B-1, ". . . in the years ahead, demands for resources produced from forest and rangelands will increase more rapidly than supplies assuming that commercial timberland owners continue to respond to price and inventory changes and manage their timber stands much as they have in the recent past." We believe this assumption is questionable because, if timber values were not held at artificially low levels by massive federal timber offerings, the private sector may have greater incentive to release their stocks for harvest. Furthermore, as private supplies are reduced, the value of timber on national forest land would probably appreciate and future sales could result in increased returns to the U.S. Treasury.

30

One aspect of the use of timber supplies which is not analyzed in narrative form in this document is the supply of timber in the form of fuel wood. We believe this subject should be addressed in the RPA process.

Range Opportunity Area (page 1-13). We concur with the stated goal. However, we believe some changes in wording would provide greater clarity and completeness to the narrative presented. Immediately under "Opportunities" (page 1-13), we feel a better statement would be, "The opportunities to promote the economic stability of livestock permittees and dependent-rural communities, as well as, to increase forage production and to improve the condition of forest and rangelands for grazing include: ...." Then, the opportunities described under this statement should be modified to include recognition of the importance of animal damage control to the economic stability of livestock producers. We suggest adding the new phrase: "allowing adequate control of predation on livestock using all methods that are consistent with state and federal laws." We also suggest the fourth opportunity be modified by adding range rodents to the list of causes of forage losses that should be controlled.

10

Recreation Opportunity Area, Wilderness Opportunity Area (O.A.), Wildlife and Fish O.A. Minerals and Energy O.A., International Forestry O.A. and Protection and Support O.A.

We concur with the stated goals and opportunities for achieving these with no substantive comments.

General comments:

In the Summary section, a brief description of the alternatives is presented on pages 4-5. Although a more thorough discussion of these alternatives is provided later in the document, the brief descriptions are inadequate. From pages 4 and 5 it would appear there is no significant difference between alternatives 1 (constant output), 4 (high all resources) and 8 (1980 RPA). A rewrite of this section would help to forestall any misconceptions. Are the figures presented in tables 1 and 2 (pages 6 and 7) based on 1983 dollars?

We strongly urge that future forest management activities continue to be conducted via an integrated approach where the effects, both positive or negative, of a proposed action be considered for all resources and resource users.

Based upon our analysis of the alternatives presented, we believe that alternative number 6 (implement plans) provides the best mix of resource outputs. Therefore, we recommend alternative number 6 as the preferred alternative and that future activities be based upon the levels prescribed in this alternative.

We appreciate this opportunity to provide input into the future management of our national forests.

Sincerely,

William P. Stephens
Director/Secretary

WPS/ts

GOVERNOR
TONEY ANAYA

DIRECTOR AND SECRETARY
TO THE COMMISSION
HAROLD F. OLSON

State of New Mexico

DEPARTMENT OF GAME AND FISH

STATE CAPITOL
SANTA FE
87503

STATE GAME COMMISSION
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CARLSBAD
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GALLUP
WILLIS D. SHEETS
RATON
THOMAS P. ARVAS, O. D.
ALBUQUERQUE

April 8, 1984

Director, RPA
USDA Forest Service
Southwestern Region
Federal Building
517 Gold Avenue, SW
Albuquerque, New Mexico 87102

Dear Sir:

We have studied each of the major subjects addressed in the nine different alternatives discussed in the DEIS 1985-2030 RPA document that we received for review. Alternative number three appears to come the closest to doing what is best for all species of fish and wildlife. However, we are still less than satisfied with this alternative, as well as the document as a whole. For example, the following quote from page 2-52 typifies the problem with the approach of the entire document; "As timber harvest increases, reforestation increases." In other words, to get any increase in one aspect (i.e., reforestation), we are forced to accept another portion of the same alternative that is not necessarily compatable with our objective. Choosing a different alternative, or parts there of, solves nothing because we are still faced with the same sort of problem. We question why reforestation cannot simply increase without being predicated on increased timber harvest, or why water quality cannot be improved without first having to have a massive increase in its use for recreation.

It seems rather naive to assume that a single document such as this can even begin to address the needs of fish and wildlife throughout the nation, let alone other factors such as range management, mineral exploration, water planning, etc. This document even attempts to address international forestry matters. What is best for fish and wildlife, and the proper course to follow for this and other matters addressed in the document, varies from

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one area to another. As a result, a document of this sort does not really have much practical application. In order for us to properly evaluate the various alternatives, we need to see the specifics of how each would be implemented in the State of New Mexico. Lacking specifics, the following represents our views of how each of the major subjects discussed in the DEIS should be approached:

1. Timber:

A certain amount of timber harvest is desirable from a wildlife standpoint, and thus logging should not be opposed categorically. However, the extent of logging, the methods used, and the areas selected for timber harvest should be determined on a case-by-case basis. Slopes, canyon bottoms, and significant watershed areas should not be logged. A variety of harvest methods should be employed, but clear-cutting should in most instances be opposed. Timber stands of significant size should be retained in an interspersed fashion between logged areas to ensure adequate refugia remain for species of wildlife dependent on old-growth timber stands. **33**

2. Range:

Grazing regimes should be of a heterogeneous nature with respect to temporal and spatial allotments. Whatever these regimes may be, wildlife should be entitled to at least 50% of the existing forage. The number of livestock permitted to graze an area and the length of the grazing period should be monitored to ensure that wildlife gets its share. In addition, thought should be given to the seasons in which grazing is allowed. Significant forage, which serves as needed cover for some species of wildlife, is often more critical than its value as food to some species during particular seasons. For example, many bird species are dependent on grassy areas for nesting in the spring, and thus a sufficient number of ungrazed sites should be retained in suitable areas prior to and during that period. Rather than a blanket approach to setting grazing regimes, a case-by-case approach is recommended. **11**

3. Recreation:

Expanding existing recreational facilities in many areas should not be done, and in many other areas these facilities should be reduced. Public access and subsequent usage of various National Forest lands already exceeds that which is optimal for

many species of fish and wildlife. Continued development of many of these areas by additional roads, trails, and campgrounds is often not in the best interests of wildlife. This is not to say that additional facilities in some areas would necessarily be detrimental, but this issue should be approached on an individual basis rather than as a broad policy to expand in all areas.

4. Wilderness:

Human populations have increased significantly over the last century, and as a result natural wilderness areas have become reduced in number and area. Contrary to popular belief, certain aspects of wilderness areas must periodically be managed to preserve their character. Every effort should be made to protect the serenity and the solitude that wilderness areas provide. However, some of the very guidelines established to accomplish this objective significantly hamper the management activities needed to preserve these areas. In fact, they often create greater disturbances than would otherwise be necessary. To categorically prohibit mechanized equipment in such areas, even though its use would be extremely limited, often produces undesirable results. For example, the actual landing of a helicopter for the stocking of fish, the numbers of which have been depleted because of increased human pressures, may be prohibited. Stocking (i.e., managing this resource) may instead be accomplished through the use of numerous pack-animals that do far greater damage that a helicopter would. The disturbance factor associated with the helicopter lasts for minutes, as opposed to that created by the pack-animals that lasts for days and may damage the ecosystem. Widespread usage of mechanized equipment is not being advocated. However, if the judicious use of mechanized equipment can be considered for management, then more wilderness could be utilized to benefit fish and wildlife.

5. Wildlife & Fish:

Every effort should be made to preserve the natural biotic diversity of each National Forest. Activities that would jeopardize this objective should be avoided. Undue attention should not be given to any particular group of organisms unless such attention is dictated by extreme circumstances. A balanced approach towards the management of fish and wildlife on National Forest lands is one that encompasses the belief that each and every native species is important to the ecosystem. **25**

6. Minerals & Energy:

The acquisition of minerals and the need for energy frequently, though not always, conflict in some way with the needs of fish and wildlife. A case-by-case analysis of each proposed mineral or energy operation should be made to determine its effects on fish and wildlife. Every effort should be made to ensure that detrimental activities are adequately mitigated prior to the granting of licenses or permits for such operations. **33**

7. Water:

Additional attention should be given to improving water quality, but this should not be for the sole purpose of increasing recreational use. Watershed disturbance should be kept to a minimum, and efforts to maintain, and even acquire additional watershed acreage, should be undertaken. Soil conservation should be of high priority and should take the form of increased funding for soil erosion projects. The effects of grazing on water should be reduced and programs should be implemented to inform the public on the detrimental aspects of overgrazing and similar activities to this resource. Funding to combat the problem of acid rain should also be considered. All of these and related activities should be of high priority, and their enactment should not necessarily be tied to increased usage of existing water supplies. **3** **5**

8. International Forestry:

Increased research on watershed management and ecological relationships of vegetation, soil, water, climate, nutrient cycling, and related factors should be conducted without necessarily increasing timber harvest. Additional cooperative research ventures should be undertaken along with providing increased training and technical assistance.

9. Protection & Support:

Fundamental research on insects, diseases, and more efficient fire management methods (to include prescribed burns) should be conducted. Fire protection and/or management should not necessarily be directly commensurate with the value of the resource nor with the products to be protected. Likewise, research on insects and disease should not be limited to just commercially important species. Collectively, protection and support projects should be broad-based, and should address both high-market resources and non-marketable resources.

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We appreciate the opportunity to comment on this document and hope that our comments are helpful.

Sincerely,

Harold F. Olson
Director

whb

cc: Wain Evans
John Hubbard
Dick McCleskey
Byron Donaldson
Gerald Gates
Bill Baltosser
Bill Isaacs

M-151

North Carolina
Department of Administration
116 West Jones Street Raleigh 27611

James B. Hunt, Jr., Governor
Jane Smith Patterson, Secretary

Margaret C. Riddle
Coordinator
Office of Policy and Planning
(919) 733-4131

March 21, 1984

Mr. John Alcock
Regional Forester - USDA
1720 Peachtree Road, N.W.
Room 804
Atlanta, Georgia 30367

Dear Mr. Alcock:

RE: SCH File #84-E-0000-5175: Draft Environmental Impact Statement for 1985-2030 Resources Planning Act Program

The State Clearinghouse has received and reviewed the above referenced project. As a result of this review, the State Clearinghouse has received the attached comments from the North Carolina Department of Natural Resources and Community Development and the Department of Human Resources.

Thank you for the opportunity to review the above referenced document.

Sincerely,

Chrys Baggett

Chrys Baggett (Mrs.)
Clearinghouse Director

CB/jcp

Attachments

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North Carolina Department of Natural Resources & Community Development

James B. Hunt, Jr., Governor — Joseph W. Grimsley, Secretary

NATURAL RESOURCES PLANNING AND ASSESSMENT
Telephone 919 733-6376
Anne Taylor
Deputy Assistant Secretary
Telephone 919 733-4984

MEMORANDUM

TO: Chyrs Baggett
State Clearinghouse

FROM: Melba McGee
Environmental Assessment Section

RE: 84-5175 - DEIS Resource Planning Act Program

DATE: March 20, 1984

The Department of Natural Resources and Community Development has completed its review of the subject proposal. The following responses are from our commenting divisions.

Office of Water Resources

This document presents the various options available to the Forest Service in managing national forests to the year 2030. Because the document covers all national forests in the country and does not discuss individual forest plans, it would be very difficult to evaluate the impact of these options on the national forests in North Carolina. The DEIS seems to take the position that one management option should guide all forest planning. It makes more sense, however, to utilize some national forests intensively, while others might be more appropriately dedicated to wilderness or less intensive uses.

N.C. Wildlife Resources Commission

The Land Management and Development Working Group has reviewed the DEIS 1985-2030 Resources Planning Act document. The group noted two deficiencies in the planning analysis procedures described in the document. The group feels that the black bear instead of the pileated woodpecker should be the management indicator species for mature/over-mature forest conditions in our region. The black bear has more stringent habitat requirements than the pileated woodpecker. Because the black bear is a hunted species, increased access and associated disturbances resulting from increased timber harvesting would have greater effects upon black bear than pileated woodpeckers. Therefore, black bear is a more suitable management indicator species for mature/over-mature forest conditions than pileated woodpecker. (Chapter 2, Page 92)

P. O. Box 27687 Raleigh, N. C. 27611-7687
An Equal Opportunity Affirmative Action Employer

A second deficiency was the method used to compute timber benefit values. It appears that softwood stumpage prices were increased to reflect road purchaser credit values, but that hardwood timber benefit values were based upon stumpage prices alone. (Appendix F-13) Thus the values cited for softwood timber benefits are to high relative to values for hardwood timber benefits.

The working group feels that Alternative 3 (High Nonmarket) offers better wildlife benefits than any of the other listed alternatives. Under this alternative, timber production in 2030 would be twice the current level in the Southeastern Region. Recreation visitor days would increase by almost 300% by 2030, and wilderness acreage would be increased by about 20%. Non-market values of National Forest land in North Carolina are probably higher than market values. This is true because of the high demand for outdoor recreation and water in North Carolina and because of the availability of other lands for intensive timber management. Alternative 3 emphasizes non-market values while providing for a reasonable increase in production of marketable products which support local economies.

National Forest lands provide a significant amount of suitable black bear habitat in the southeastern region. Alternative 3 appears to provide the best means of preserving bear habitat while providing sufficient timber harvests to support early successional species. In addition, the southeastern states have the ability to support early successional species on private lands, but black bear habitat is rapidly declining on most private areas. Therefore, Forest Service lands should be managed to preserve black bear habitat.

Alternative 3 significantly increases recreational use on national forests, and the working group feels that a similar increase in funding and personnel for low enforcement will be required to administer this increased use. This does not appear to be addressed in this document.

Thank you for the opportunity to review. If questions arise, please notify me at 733-6376.

MM/wag

NORTH DAKOTA FOREST SERVICE
State Forester Horticulture Bldg., NDSU, Fargo, ND 58105 (701)-237-8174

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N.D. FOREST SERVICE SHOP
Box 21 A, Forestry Drive
Bottineau, ND 58318

April 4, 1984

Mr. Tom Coston
Regional Forester
U.S. Forest Service
P.O. Box 7669
Missoula, MT 59807

Dear Tom:

Enclosed are comments relative to program alternatives for the 1985 update. I have chosen to pick an alternative for each goal that would generally provide the best long-term results when considered across the three major program areas. Since resources are greatly affected by the extremes in any one program area, my choice of an alternative is intended to integrate the effects across the program areas. Also, I picked number six several times and since this involves implementation of plans, it would have to be assumed that the plans have in nearly all cases undergone scrutiny by numerous groups nationwide during their development.

Sincerely,

Bob Johnson

Robert E. Johnson
State Forester

REJ:vl

Enclosure

TREES FOR TOMORROW

1. Timber

   Alternative 6 would provide moderate increases in timber output in S&PF programs, would emphasize research support and a slight decline in production on the national forest. A large percentage of the timber is on private land and should receive more attention.

2. Range

   Alternative 6 would include improved management with increased quality and quantity of forage on the national forests, would permit an increase in production from the state and private sector and would provide for research support.

3. Recreation

   Alternative 6 would provide for moderate increased recreational use of national forest lands to meet the rising demand, would provide increased assistance to forest landowners on recreational land access and would provide increased research support.

4. Wilderness

   Alternative 6 would provide an initial increase in acreage that is sustained through the period on the national forests and would provide a moderate increase in research support.

5. Wildlife and Fish

   Alternative 6 provides an appropriate program to manage and maintain existing wildlife improvements on the national forests and would provide an initial increase in acres that is sustained over the period. This alternative would also allow a moderate increase in state wildlife and fish habitat on the non-federal forest lands and would provide for good research support.

6. Minerals and Energy

   Alternative 4 would allow for efficient processing of lease applications on national forest lands, would provide for moderate technical assistance to state forestry agencies and moderate research support.

7. Water

   Alternative 2 would provide significant increased emphasis on water quality improvement on the national forests in the state program and in research. Water quality maintenance is critical on a nationwide basis along with the interrelationship of soil protection.

8. International Forestry

   Alternative 6 would, in addition to providing new management information from research, would provide extensive information for evaluation of U.S. and international timber markets, and work with developing countries.

9. Protection and Support

   Alternative 6 would provide for an improved FMEI on national forest lands, would provide for flexibility on state land with some resulting efficiency, and would provide good research support.

OKLAHOMA DEPARTMENT OF AGRICULTURE

2800 North Lincoln Boulevard
Oklahoma City, OK 73105
(405) 521-3864

Jack D. Craig — **Commissioner**
Clifford W. LeGate — **Deputy Commissioner**
Clyde A. Bower — **Asst. Dep. Commissioner**

Directors

Charles W. Anderson	Administrative Services
Sue Cannon	Agricultural Laboratory
John Cochrane	Agricultural Statistics
Berkeley Peterson	Animal Damage Control
Robert Hartin, DVM	Animal Industry
Roger L. Davis	Forestry
George M. Parker	Marketing Industry
Dale O. Laubach	Plant Industry
Bob Daugherty	International Marketing Programs

April 9, 1984

John E. Alcock, Regional Forester
USDA - Forest Service
1720 Peachtree Rd., NW
Atlanta, GA 30367

Dear Mr. Alcock:

We have reviewed the Environmental Impact Statement for the 1985-2030 RPA, and feel that Alternative 4 (High All Resources) provides the best long-term plan.

There is a tremendous potential for the forest resources of the South to participate in a general upgrading of the quality of life in this country. However, this is possible only through long-term planning, and management of these resources starting right now.

Forestry already contributes substantially to the economy in Oklahoma, but there are many opportunities for accelerated improvement, particularly in exporting and utilization.

Alternative 4 will promote development of our forest resources at a pace to keep up with our demands, but also to reduce wood imports, increase exports, and provide for the myriad of other multiple uses of our forests.

Sincerely,

Roger L. Davis
State Forester

RLD:mem

M-154

WILDLIFE CONSERVATION COMMISSION

DON R. GREENHAW, CHAIRMAN	JOHN D. GROENDYKE, MEMBER
L. B. SELMAN, VICE-CHAIRMAN	JUD LITTLE, MEMBER
CARL PIERCEALL, SECRETARY	ROY BOECHER, MEMBER
DOYLE BURKE, MEMBER	"H. B." ATKINSON, MEMBER

OKLAHOMA

DEPARTMENT OF WILDLIFE CONSERVATION

STEVEN ALAN LEWIS, DIRECTOR
GARLAND FLETCHER, ASSISTANT DIRECTOR
CHARLES R. WALLACE, ASSISTANT DIRECTOR

1801 N. LINCOLN — P.O. BOX 53465 — OKLAHOMA CITY, OK 73105 — PH. 521-3851

March 26, 1984

Regional Forester
1720 Peachtree Road N.W.
Suite 804
Atlanta, Georgia 30367

Dear Sir:

We have reviewed the Forest Service's DEIS RPA 1986 and would like to offer the following comments.

Upon reading this document, one gets the distinct impression that market resources, especially timber, are receiving primary emphasis with non-market resources being secondary. Several of the alternatives (9, 4, 2) would appear to be inconsistent with the Timber Management Act of 1976 which requires multiple use management of National Forest with market and non-market resources receiving equal emphasis.

Alternative 9 is so production oriented as to be totally unrealistic as a multiple use management alternative. As stated in the DEIS, recovery objectives for endangered, threatened and sensitive species would not be met and the carrying capacity for species commonly hunted and fished would decrease 20 to 40 percent. It would appear that this alternative was developed with the purpose of making the more realistic, however market oriented, alternatives 2, 4, 6, 7, 8 seem more appealing. **33** **26**

Alternatives 1 and 5 fail to address the ever increasing demand for both market and non-market resources and are, therefore, unacceptable.

Alternative 3, while entitled "high non-market" actually provides a moderate level of market outputs as constrained by consideration of non-market resources. The following points found on pages 2-14 to 2-17 of the DEIS, support alternative 3 as the most equitable multiple use management alternative:

- adverse impacts of local employment are avoided since market outputs are provided at economically efficient levels
- carrying capacity for species hunted and fished would be increased 10 to 15 percent
- provides for higher water quality
- emphasizes protection and mitigation for mineral exploration and development
- double state and private forestry programs
- encourages more efficient use for wood

AN EQUAL OPPORTUNITY EMPLOYER

An ever increasing demand for both market and non-market resources is being placed on an ever decreasing land base. The private sector can best supply these market oriented demands while the Forest Service should strive to provide an equitable blend of management for both market and non-market goods. Alternative 3 seems to best approach the multiple use objective.

Thank you for the opportunity to provide these comments.

Sincerely,

Steven Alan Lewis
Director

SAL:RT:dt

cc: Ron Masters
Reggie Thackston
Curtis Howze

M-155

VICTOR ATIYEH
GOVERNOR

Department of Energy

LABOR & INDUSTRIES BUILDING, ROOM 102, SALEM, OREGON 97310 PHONE 378-4040

March 2, 1984

Jeff M. Sirmon, Regional Forester
Forest Service, U.S. Dept. of Agriculture
Pacific Northwest Region
P.O. Box 3623
Portland, OR 97208

Dear Mr. Sirmon:

Thank you for the opportunity to comment on the Draft Environmental Impact Statement (DEIS) for the 1985 Renewable Resource Program of the Forest Service, U.S. Department of Agriculture. Enclosed are the forms from the RPA '85 study guide expressing this agency's comments on the proposed plan alternatives.

Our overall feeling about the DEIS is that renewable resources are not clearly considered. Oregon has a great wealth of renewable resources such as wind, hydro, geothermal and biomass. A large portion of these resources are located on U.S. Forest Service land. We would encourage consideration of how these resources are to be developed. We also feel that it is preferable to determine the nature of this development at a local level. Therefore, we are recommending Alternative 6 (Implement Plans) be adopted.

Thank you again for the opportunity to comment on the DEIS. We hope our comments will be of help to you in this process.

Sincerely,

Lynn Frank
Director

LF/RD:jf
51291(F2)

Enclosure

VICTOR ATIYEH
GOVERNOR

Forestry Department
OFFICE OF STATE FORESTER
2600 STATE STREET, SALEM, OREGON 97310 PHONE 378-2560

February 29, 1984

Pacific Northwest Region
319 S.W. Pine Street
Box 3623
Portland, OR 97208

Gentlemen:

Thank you for the opportunity to review the Draft Environmental Impact Statement for the RPA '85 document and associated Assessment Supplement. The Oregon State Forestry Department is vitally concerned with the level of management and production of all forest related resources in Oregon.

The following represents our viewpoints on the above documents and our input into the RPA preferred program alternative selection process.

Sincerely,

for H. Mike Miller
State Forester

HMM:gu
4765D

M-156

DRAFT ENVIRONMENTAL IMPACT STATEMENT

RPA '85

INTRODUCTION

The DEIS RPA '85 document review response follows in four segments: (A) preferred alternative, (B) reasons for choosing the preferred alternative, (C) other comments, and (D) conflicting data.

Preferred Alternative

In attempting to determine the preferred alternative, four criteria were viewed as important in this decision-making process.

A. Timber outputs from national forests.

B. State and private forestry outputs.

C. Research program.

D. Balance of all programs.

The 1980 Timber Supply Assessment for the State of Oregon indicates that there are many communities in the state that may suffer economically because of the downturn in harvests from private lands within the various timbersheds. There are some 71 communities that are dependent upon timber supply. Since the 1980 Timber Supply Assessment, much has happened in the way of timber supply and demand considerations that have potential effect on these communities. For example, as a result of updated forest inventories on national forests, there is a strong indication that the output targets for timber harvest that were set as objectives of the Forestry Program for Oregon cannot be met because of an increase in lands classified as unsuitable. This increase in the unsuitable class is a result of a re-inventory that would indicate that reforestation criteria cannot be met or for other reasons that would seem to indicate this land as unsuitable for long-term sustained timber outputs. The Oregon Timber Supply Assessment for 1980 indicated, at that time, that national forests could increase their harvest by as much as one-third and still meet multiple use requirements. Because of the re-inventory, this increase in outputs may not be practical. Actually, some of the alternatives would meet this demand.

The 1980 Timber Supply Assessment did not project what timber demand would be. Indications at the time were that demands would be at least at the levels of the late 1970's or even higher. Starting in 1981, it was obvious that demand for forest products was not at the level of the late 1970's. Further, it is unknown at this time what that demand for timber outputs may be as we look to the year 2030.

The supplement to the 1980 RPA Assessment indicates that demand will very likely increase but probably not to the levels that were forecast in the original RPA Assessment. The combination of these factors makes it difficult to determine a preferred alternative as it relates to timber outputs from the national forest system.

In looking at the second criteria, that of dealing with state and private forestry, it would appear that Alternative 6 has the most to offer for achievement of objectives in that program area in RPA.

Alternative 6 also indicates the best program for the research effort of the U. S. Forest Service.

When attempting to look at all the various criteria and determine what would be an appropriate balance for the State of Oregon, it would appear that Alternative 6 does the most to balance Oregon's needs in the area of forest lands. This alternative appears to meet most of the State's needs as considered in such documents as the State Forest Resource Plan (SFRP), the Statewide Comprehensive Outdoor Recreation Plan (SCORP), Wildlife Habitat Considerations in Forest Operations, the Forest Resource Program for Oregon, and the New Directions in Water Policy.

Reasons For Choosing The Preferred Alternative

Each of the three U. S. Forest Service branches (NFS, State and Private Forestry, and Research) were evaluated separately as indicated above. As mentioned, Alternative 6 was selected as the preferred alternative for the State and Private Forestry branch based on meeting economic and state forest resource plan objectives. Alternative 2, 7, and 9 met some economic but none of the protection related objectives that would be required for a balanced program. As mentioned above, Alternative 6 was selected as the Oregon State Forestry Department's preferred alternative but with the consideration that the flexibility be provided for that would allow the national forest systems' outputs to be responsive to the plight of the 71 local communities dependent on national forest timber harvests. It is our opinion that Oregon's national forests have the best opportunity of any of the timberland owners in this state to increase their timber harvests to meet the forecast timber supply shortage that was indicated by the 1980 Timber Supply Assessment.

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Research Alternatives 6 and 8 are identical. Alternative 6 was selected as the Department's preferred program for the research branch primarily because these two alternatives were the only ones giving a high emphasis to specific research areas mentioned in the Forestry Program for Oregon.

Other Comments

1. The presentation of alternative programs without a predetermined preferred program represents progress. The preferred program should be based on a combination of assessment data, USFS expertise and public input. This method allows more flexibility as the USFS is not defending a fixed position but is apparently seeking assistance in developing a position.

2. The PNW Region 6 (R-6) "Study Guide" for the DEIS RPA '85 is very good. The Ochoco National Forest also developed a "Graphic Supplement" which is very good. Both documents enable responders to visualize through the graphic presentations the general effects of fully implementing various alternatives. Both documents also presented specific "target" data by alternative, which aided in the selection process. The display of alternative effects (targets) at the individual National Forest, Regional and National levels is very valuable. The audience addressed by the DEIS RPA '85 is highly varied and responds at different levels. We urge the continued development and display of all RPA data at these three levels.

3. Considerable narrative clarification and continuity could be achieved if DEIS RPA '85 Chapters 1, 3 and 4 were discussed by USFS branch - NFS, S&PF and research (like Chapter 2).

   In Chapter 1, if goals and/or opportunities were discussed by USFS branch, it would indicate specific direction within the branches. This is currently lacking in most RPA documents. Chapters 3 and 4 need the same branch data/narrative presentation. Impacts on NFS may or may not be of the same magnitude as on S&PF lands.

4. The overall organization of the DEIS is better than previous efforts. The numerous charts and tables in both the text and appendix frequently have regional application. This is critical for many responders.

Conflicting Data

40

In our review, we found over 100 instances where data in one section of the DEIS conflicts with that shown in another section or, with the Assessment Supplement.

HMM:gu
5904D/0002D

M-157

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
Post Office Box 1467
Harrisburg, Pennsylvania 17120
April 5, 1984

(717) 787-2703

In reply refer to
RM-F FAS
Bureau of Forestry

U.S.D.A. Forest Service
310 West Wisconsin Avenue
Milwaukee, Wisconsin 53203

Dear Sir:

Thank you for the opportunity to comment on the Draft Environmental Impact Statement for the 1985 RPA Program.

The Pennsylvania Bureau of Forestry prefers Alternative 4, High All Resources, because of its balanced response to the national goals. In addition, it would provide financial aid and technical assistance through the Commonwealth that is at or near a level commensurate with our needs and goals. I cannot stress too strongly the need for cooperative funding to the continued maintenance and health of programs such as CFA for private lands, insect and disease control, and wildfire prevention and suppression.

Alternatives 6 and 7 were just behind 4 in acceptability. Our major concern with these alternatives is their high response to International Forestry Goals and only moderate response to water goals. Otherwise, their response to national and Pennsylvania goals is quite acceptable and balanced.

I commend the Forest Service on the fine job they have done with this tremendous task and appreciate the opportunity to comment.

Sincerely,

R. R. Thorpe, State Forester

M-158

DEPARTMENT OF NATURAL RESOURCES

ABR. 10 1984

Mr. John E. Alcock
Regional Forester
1720 Peachtree Road, NW
Suite 804
Atlanta, Georgia 30367

Dear Mr. Alcock:

Thank you for the opportunity to comment on the Draft Environmental Impact Statement for the 1985-2030 Resources Planning Act Program.

After an evaluation of the nine alternatives for Forest Service activities for the next four decades, the Department of Natural Resources of Puerto Rico endorses Alternative 8 (1980 RPA Program). This alternative represents an optimum program in terms of productivity and protection of forest and range land resources. The cost for implementing this alternative program is less than budget for alternatives 2, 4, 6, and 9.

One of our main concerns is International Forestry, because Puerto Rico has an important role in this aspect. In cooperation with the Department of Natural Resources, the Caribbean National Forest and special units of State and Private Forestry in Puerto Rico, have provided technical assistance and training on tropical forestry problems in the Caribbean basin area. We strongly support the Research component of Alternative 8, which best accomplishs the International Forestry Goal of the 1985 RPA Program.

In terms of timber markets and a range of very important environmental issues, the United States does not operate in an isolated position, but is intimately linked to other forests of the world, especially tropical forests.

Commonwealth of Puerto Rico, Department of Natural Resources
OFFICE: Muñoz Rivera Avenue, Stop 3, San Juan, Puerto Rico
MAILING ADDRESS: Box 5887, Puerta de Tierra, Puerto Rico 00906

Adequate management programs for tropical forests are extremely important to the government and people of the United States. A recent (March 1984) publication by the Office of Technology Assessment of the U. S. Congress, "Technologies for Sustaining Tropical Forest Resources" explores these issues in an excellent fashion. We urge the RPA staff and other U. S. Forest Service specialists to thoroughly familiarize themselves with this document, and, where appropriate to incorporate its suggestions into International Forestry Programs and Planning.

Thank you once again for this opportunity to comment.

Sincerely,

Hilda Díaz-Soltero

Hilda Díaz-Soltero
Secretary

cc: Mr. Frederick E. Rushford

M-159

PRT

April 6, 1984

USDA Forest Service
Southern Region
1720 Peachtree Road, NW
Atlanta, Georgia 30367

SUBJECT: Comments of the Resources Planning Act's DEIS

Dear Sir/Madam:

I was recently given the assignment of reviewing the Draft Environmental Impact Statement on the 1985 RPA program. Having reviewed the various alternatives the last couple of weeks I feel that the most viable is Alternative 6.

The reasons for this choice is it reflects the state and federal cooperation needed to meet both levels of government's needs and goals. Alternative 6 will also increase wilderness designation acres to 32 million acres in 1986 and to 36 million acres in 2030. It would also help the Forest Service to meet its management objectives and recovery schedules for the protection of endangered, threatened and sensitive species as well as increase the carrying capacity of commonly hunted and fished species.

Under Alternative 6, recreation use would increase by 69 percent over the planning period. This will be very important as our nation's population continues to grow and as our available leisure time increases. Research will also benefit under Alternative 6 as useful and needed information will be collected on both trees and wildlife as well as the effects of acid rain on our forest ecosystems. Another useful research benefit will be the study of water and aquatic needs. This is very important as our nation begins to address such problems as aquifer recharging and preventing wasteful water use.

Thank you for the opportunity to provide comments on the draft environmental impact statement.

Sincerely,

Robert Owens

Robert Owens
Planner
Engineering and Planning

RO:csm

South Carolina Department of Parks, Recreation & Tourism
Suite 110, Edgar A. Brown Building • 1205 Pendleton Street • Columbia, South Carolina 29201

South Carolina
Wildlife & Marine
Resources Department

James A. Timmerman, Jr., Ph.D.
Executive Director
Jefferson C. Fuller, Jr.
Director of
Wildlife and Freshwater Fisheries

April 9, 1984

Thomas E. Hamilton, Director
Resources Program and Assessment
USDA Forest Service
P. O. Box 2417
Washington, D. C. 20013

Dear Mr. Hamilton:

The South Carolina Wildlife and Marine Resources Department has reviewed the Draft Environmental Impact Statement on the 1985 RPA Program (DEIS). As a result of our review we offer the following comments for your consideration.

The South Carolina Wildlife and Marine Resources Department is extremely interested in all plans of the U. S. Forest Service as they relate to the future management and enhancement of fish and wildlife resources, particularly when they pertain to resources in South Carolina. The DEIS has addressed the potentials and direction of a long range, multiple-use forest plan. Although the primary emphasis and responsibility of our agency is more constrained in terms of forest environments and geographic region, we do strongly support the RPA Program as required by the amended Forest and Rangeland Renewable Resources Planning Act.

The National Environmental Policy Act of 1969 (NEPA) requires that an environmental impact statement be prepared for "major federal actions significantly affecting the quality of the human environment." NEPA requires that the statement include, among other things, "alternatives to the proposed action." Further, any alternative proposed in the statement must be an implementable or viable alternative. The RPA Program is considered "major federal action" and the DEIS was prepared under such an assumption.

The DEIS contains nine alternatives that do not appear to be supported by explicitly stated rationale. Readers of the document may reach different conclusions as to the intent of the different alternatives. As a result of the ambiguity in the alternatives coupled with the array of figures on timber volumes, economic values and demand projections, the entire document becomes incomprehensible to the reader.

From the aspect of fish and wildlife, a review of the nine alternatives reveals that five of the nine alternatives (Alternatives 1, 2, 5, 7 and 9)

Rembert C. Dennis Building □ P.O. Box 167 □ Columbia, South Carolina 29202 □ Telephone: 803 - 758-0007

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will not meet objectives for restoring threatened and endangered species, particularly in Region 8. These five alternatives would likely violate Section 7 of the Endangered Species Act because a reduction in mature pine habitat would occur along with a decline in red-cockaded woodpecker populations. Congress has repeatedly affirmed its commitment to the recovery of endangered species and the Forest Service's view that a relaxation of regulations will occur is unacceptable and not supported by the American public. **26**

The DEIS presents nine alternatives; yet, the Forest Service does not indicate the preferred alternative. As such, the Forest Service is essentially professing that all the alternatives would be equally acceptable to the agency. The Forest Service, by Congress, has been charged with the responsibility of developing a "vision of how forest and range resources can contribute to the progress and well-being of the country." Since the American public expects the Forest Service to maintain its leadership role in forestry, the Forest Service should be presenting its vision of the forest and rangeland future -- not an array of unrealistic and unimplementable alternatives. We recommend that a preferred alternative be developed and released to the public for their review prior to the release of the 1985 RPA Program. **32**

The preferred alternative (and for that matter, all alternatives) should respond positively to the 1979 Assessment. Currently, only four of the nine alternatives respond positively to the findings in the 1979 Assessment. These alternatives are 4, 6, 7 and 8. Alternative 6 "represents the preferred program levels from National Forest planning and State Forest Resource planning" and where such plans do not exist or are incomplete, the recommended program level of the 1980 RPA are substituted. Since many of the forest plans are incomplete and completed plans must comply with the 1980 RPA, we believe alternatives 6 and 8 are almost equivalent. Therefore, there are only three alternatives that are responsive to the Assessment and its subsequent update. How can the program now being prepared by the Forest Service respond to the natural resource situation as projected in the 1979 RPA Assessment and its supplement if the proposed alternatives do not respond to the Assessment? **36**

The values for hunting and fishing, which were used to derive Present Net Value are not supportable. These unjustifiably low economic values for wildlife and fish must be questioned (Table F.2 and F.4). The values for wildlife, fish and recreation should be significantly higher than the values listed. The values compiled by the consultant economists Loomis and Sorg were adjusted downward by 37.5 percent. Such a reduction appears to be an intentional effort to prevent any possibility that wildlife and fisheries use may compete with commodity outputs, especially timber. The DEIS states that "the travel cost method represents a total willingness to pay" (page F-11), while in fact this method of estimating values represents a net willingness to pay. The Loomis and Sorg report states that the values on which the authors based their estimates are net estimates. The adjustment downward of the Loomis and Sorg values was in part because "the travel cost method estimates values on a site-by-site basis" (F-11). Loomis and **43**

Sorg had already adjusted their values for each region where the studies took place. The values do not represent site values. Any length of stay which was misreported by survey respondents (F-12) could have varied either up or down. The assumption that the values were overestimates is unfounded. The values reported by Loomis and Sorg (Table F.4) did not include license fees or any other special use fees. Any cost-benefit analysis should include fees. Overall the RPA is weak in recognizing induced values to the economy resulting from wildlife appreciation and/or harvests. We recommend that values from the "1980 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation" be incorporated into the program alternatives.

The South Carolina Wildlife and Marine Resources Department believes that the range of alternatives is insufficient. Alternative 9 will require a change in law before it can be implemented. All alternatives entail proposed departures from sustained yield in 1986, ranging from 179.8 mbf (Alt.6) to 253.6 mbf (Alt.7). All alternatives display a good range of outputs for commodities, primarily timber, but not for wildlife and fish. Every alternative, with the exception of Alternative 5, which is a reduced program for all resources, provides for increased timber production. Why wasn't an alternative developed, such as Alternative 3, which provided for the optimization of fish and wildlife resources? This was done for timber. It can be argued that this is a violation of NEPA. **20**

It is difficult to support the assumption that hunting, fishing, and non-consumptive wildlife use is going to increase in all alternatives even though the carrying capacity of the habitat is going to decline so dramatically in alternatives such as 2 and 9. That is a totally unrealistic assumption which should be reanalyzed. Wildlife and fisheries recreation use should be related to the habitat carrying capacity on pages 2-91. Alternative 9 (high productivity) is not a realistic alternative because as stated on pages 4-36 and 4-37 "This (alternative) would eventually result in more sensitive fish and wildlife species being federally listed as endangered and threatened," and "These impacts on fish and wildlife habitat and populations will challenge agency relations with State Fish & Wildlife Agencies."

The title "High Productivity" for Alternative 9 should be changed because it somewhat deceives the public. High productivity indicates that timber management will primarily be practiced on the most productive sites and maintaining the productivity of aquatic and terrestrial ecosystems will be a high priority. "High productivity" is a misrepresentation of the actual intent of Alternative 9, which is to harvest timber on all Forest lands, even those regarded as marginal. Timber management on these marginal sites is extremely expensive, in terms of high costs (expensive road building, difficult reforestation, etc.) and the high potential for environmental degradation. This alternative should be changed to "Maximum Timber" or "Maximizing Revenues to the Treasury". This is especially true since policies for environmental protection, which were developed by professional biologists, soil scientists, hydrologists, etc., are disregarded. Alternative 9 is not an "implementable alternative," since it totally disregards Forest Service policy such as protection of streamside zones and maintaining viable populations of vertebrate species. It appears that this alternative was presented so alternatives such as 2 or 4, which provide for significant timber increases, could be selected **21**

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and be regarded as a compromise. The legality of presenting an alternative which is not realistically implementable, to possibly be perceived as compromising, may be challenged.

The following adverse environmental effects will occur through implementation of all alternatives except Alternative 5, yet none of these impacts are adequately covered in the DEIS. This may be a clear violation of NEPA. **34**

1. Increased stream sedimentation due to logging, some silvicultural activities, road construction, and mineral extraction will impact fisheries and other stream flora and fauna.
2. Road construction in previously unroaded areas will result in irreversible resource commitments.
3. The cumulative impact of the thousands of miles of road construction and reconstruction will negatively impact many wildlife species.

It is difficult to judge alternatives when the main wildlife resources are essentially "non-market"; yet, they are compared to all competing resources on a cost-benefit basis. To compound the situation, the highest dollar values (WFUD's) of the wildlife resource are mainly generated for Region 8 by white-tailed deer; a species adapted to early successional stages which there are no major shortages of this seral stage on private lands in the Southeast. The species requiring older or different habitats are not well represented in comparison to white-tailed deer when looking at wildlife dollar benefits alone. The projected effects of each alternative on national habitat capabilities (Page 2-90) for indicator species (white-tailed deer, wild turkey, warm-water fish, pileated woodpecker, otter, osprey, meadowlark and hairy woodpecker) occurring on southern national forests were used to help rank alternatives by balancing them with estimated cost benefits to game and endangered (mostly red-cockaded woodpecker) species. **46**

Alternative 3 (High Nonmarket) appears to offer better wildlife benefits than any of the other listed alternatives. Under this alternative, timber production in 2030 would be twice the current level in Region 8. Recreation visitor days would increase by about 20%. Nonmarket values of National Forest land in many southeastern states are probably higher than market values. This is true because of the high demand for outdoor recreation and water and because of the availability of other lands for intensive timber management. Alternative 3 emphasizes nonmarket values while providing for a reasonable increase in production of marketable products which support local economics. This alternative would also intensify forest management in the state and private sectors, which has the effect of stimulating the economy through reduced federal spending (lower taxes) and increased private investment (new industry). Even with the artifically reduced values used for wildlife, fish, and recreation, Alternative 3 has the highest total Present Net Value within Region 8. We believe Alternative 3 would be the best choice of the proposed alternatives.

In conclusion, we do support the RPA Program and its associated planning processes however, the current DEIS is unacceptable. Overall, the RPA as presented will commit the Forest Service to unwise, high commodity use of our National Forests. The RPA inadequately discloses the conflicts between the emphasis on increased timber production in the alternatives and the long term **33**

decline in fish and wildlife productivity. Therefore, it is the recommendation of the South Carolina Wildlife and Marine Resources Department that the DEIS be re-evaluated by the Forest Service, rewritten, and resubmitted for public review and comment.

SPECIFIC DETAIL FOLLOWED THIS SUMMARY. IN THE INTEREST OF SAVING SPACE, WE HAVE OMITTED THIS SECTION. HOWEVER, RPA HAS THESE COMMENTS ON FILE AND THEY ARE AVAILABLE FOR REVIEW.

We appreciate the opportunity to comment on the DEIS and hope that our comments will be helpful in developing a strong and functional national plan that will contribute to the progress and well-being of our country.

Sincerely,

James A. Timmerman, Jr., Ph.D
Executive Director

JAT,jr.
cc: John Alcock
Jefferson C. Fuller, Jr.
W. Brock Conrad
Ed Duncan
John Frampton
Bill Mahan

M-162

South Dakota
Department of
Game, Fish and Parks

Office of the Secretary
Sigurd Anderson Building
445 East Capitol
Pierre, South Dakota 57501
(605) 773-3387

March 6, 1984

James F. Torrence
Regional Forester
United States Department of Agriculture
Forest Service
P.O. Box 25127
Lakewood, CO 80225

Dear Mr. Torrence:

The South Dakota Department of Game, Fish and Parks has reviewed the Draft Environmental Impact Statement for the 1985 - 2030 Resources Planning Act Program. As a result of that review we offer the following comments for your consideration.

The subject document (RPA) addresses management of the national forests system on a national scope. Therefore, it makes specific comments difficult and much less applicable.

The RPA considers nine alternatives in detail. Each alternative represents an integrated mix of resource outputs, grazing levels, recreational opportunities, wilderness allotments, anadromous fisheries production, mineral exploration and development, application concerning the Clean Water Act, impacts to state and private forestry programs, levels of multi-resource planning and technical assistance, and research programs. Additionally, each alternative produces different levels of activities, goods, services, and research. The nine alternatives run the gamut of continued constant level and mix of program outputs at 1982 levels to maximization of specific market and non-market outputs.

While it is difficult to select one best alternative, we favor emphasis placed on non-market outputs as depicted in alternative three. We feel that in the past, too much emphasis has been placed on increased market resource outputs at the sacrifice of non-market outputs. We feel it is imperative that more consideration be given to non-commodity resources on the National forests and grasslands. Increased problems associated with access on private property, land use change, and economics help substantiate this belief.

Alternative three emphasizes achievements of high output levels of water, wildlife and fish, recreation, wilderness, and other non-market resources. These categories would, by necessity, have to be tailored to the individual forests or grasslands in the system.

As stated previously, the RPA presents the alternatives on a national scope. Intelligent and comprehensive evaluations is difficult until more local application of the plan is developed. At the same time the terms used are either ambiguous or vague and are somewhat meaningless as descriptions of measurable or definable management activities; "emphasis on wildlife habitat" and "multiple use" are examples.

The South Dakota Department of Game, Fish and Parks has been working closely with the Forest Service on each of the grasslands and forests located in South Dakota to better achieve equality in multiple use management. Progress has been accomplished the past few years and every effort will be made on our part to ensure that this continues.

Thank you for the opportunity to submit comments.

Sincerely,

Jack Merwin
Secretary

JM/ld

M-163

TEXAS FOREST SERVICE
The Texas A&M University System
Office of the Director
(713) 845-2641
College Station, Texas 77843

5.3261

April 5, 1984

Mr. Stanford M. Adams
Director, Office of Information
Southern Region - USFS
1720 Peachtree Road, NW
Atlanta, Georgia 30367

Dear Stan:

I am responding to your memorandum of March 27, regarding the EIS for the 1985-2030 RPA Program.

Texas is following the lead of the National Association of State Foresters in preferring Alternative #6. We feel that it best reflects implementation of the state plans and development of the timber resource.

Likewise, I have been contacted by the Texas Department of Agriculture for recommendations regarding these alternatives. I anticipate your receiving a response from that department. I am not sure that the Governor's Office will respond.

Best regards,

Bruce R. Miles
State Forester

OFFICE OF THE GOVERNOR

MARK WHITE
GOVERNOR

May 11, 1984

Mr. John E. Alcock
Regional Forestor-Forest Service
U.S. Department of Agriculture
1720 Peachtree Road N.W.
Room 894
Atlanta, Georgia 30367

Dear Mr. Alcock:

The Governor's Office has received the Draft Environmental Impact Statement (DEIS) for the 1985-2030 Resources Planning Act Program. The Environment Impact Statement number assigned to this project is 4-01-50-030.

Several Texas agencies have reviewed this DEIS. The Texas Department of Water Resources noted the need for a more explicit distinction between the proposed scope of research in genetic engineering and the scope of research in conventional plant breeding. The General Land Office noted that of the nine alternative programs discussed in the DEIS, Alternative 6 appears to provide the most desirable direction. Comments from these and other reviewing agencies are enclosed for your use in developing the final report.

We appreciate the opportunity to review this project. Please contact this office if we may provide further assistance.

Sincerely,

John M. Gosdin, Coordinator
Natural Resources, Water and Environment

JMG:ah

Enclosure

SAM HOUSTON BUILDING • P. O. BOX 13561 • AUSTIN, TEXAS 78711

M-164

THE STATE OF TEXAS

CURTIS TUNNELL
EXECUTIVE DIRECTOR

TEXAS HISTORICAL COMMISSION

P.O. BOX 12276 AUSTIN, TEXAS 78711 (512) 475-3092

February 23, 1984

Mr. Thomas E. Hamilton, Director
Resources Program and Assessment
USDA Forest Service
P.O. Box 2417
Washington, D.C. 20013

Re: Comments on DEIS
1985-2030 Resources
Planning Act Program

Dear Mr. Hamilton:

We appreciate the opportunity to comment on the above-referenced DEIS pursuant to the National Historic Preservation Act of 1966, as amended and its implementing regulations, 36 CFR, Part 800.

Although we do not wish to state a preference for a particular program alternative, we do wish to state that any program chosen by the Forest Service should address its compliance procedures in accordance with Executive Order 11593 and 36 CFR, Part 800. These obligations under the laws and regulations should be explicity stated in the EIS and carried out at the appropriate levels within the Forest Service in coordination with the State Historic Preeservation Officer. 8

We look forward to working with the Forest Service in carrying out the mandate to effectively manage our cultural resources through the compliance procedures.

Thank you for the opportunity to comment.

Sincerely,

Patricia E. Patterson

LaVerne Herrington, Ph.D. for
Deputy
State Historic Preservatior
Officer

PEP/LH/lft

The State Agency for Historic Preservation

M-165

TEXAS
PARKS AND WILDLIFE DEPARTMENT
4200 Smith School Road Austin, Texas 78744

COMMISSIONERS
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Midland
DR. RAY E. SANTOS
Lubbock
WM. M. WHELESS, III
Houston

CHARLES D. TRAVIS
Executive Director

March 23, 1984

Mr. John E. Alcock
Regional Forester
1720 Peachtree RD NW
Room 804
Atlanta, Georgia 30367

Re: Resource Planning Act Program,
U. S. Forest Service
DEIS 1985-2030

Dear Mr. Alcock:

The U. S. Forest Service (USFS) has completed the monumental task of determining the potential effects of nine alternatives for USFS activities on the 191 million acre National Forest System, cooperative assistance program with states and private landowners, and forest/range research.

Comments on the DEIS, provided on the attached sheets, are directed mainly toward identifying concerns within the stated USFS "opportunity areas" and ranking alternatives for these actions in regard to their perceived effects upon wildlife and other natural and recreational resources of Texas.

One problem in comparing action alternatives is the inherent "non-market" value of many wildlife resources. These resources are in turn compared to competing resources on a cost-benefit basis. To compound the problem, the highest dollar values, based on "wildlife and fish user day (WFUD)," for wildlife resources are derived mainly for Region 8 (East Texas) for white-tailed deer. This species is adapted to early successional stages which are abundant on private lands. Animal species requiring older or different habitats are probably not well represented as compared to white-tailed deer, when looking at wildlife dollar benefits alone.

Projected effects of each alternative on national habitat capabilities (page 2-90) for indicator species (white-tailed deer, wild turkey, warm-water fish, pileated woodpecker, otter, osprey, meadowlark, and hairy woodpecker) occurring on Texas national forests were

43

used to rank alternatives by balancing them with estimated cost benefits to game and endangered species (primarily red-cockaded woodpecker).

Additional comments are provided on the attached sheets.

Sincerely,

Charles D. Travis
Executive Director

CDT:JBO:RWS:pb

Attachments

cc: Brent Ortego, TPWD, Jasper

Chapter 1: PURPOSE AND NEED FOR ACTION
Results of Scoping
National Goals and Opportunities

Page 1-12 Timber. Of the 3 major ways to respond to rising demands for timber, the latter 2 methods which deal with the process of increasing net annual timber growth and harvests from existing timber resources might be very detrimental to wildlife species desiring mixed pine-hardwood habitats, hardwood habitats and old growth timber.

The national forest properties in East Texas (Region 8) are surrounded by land that are predominantly under short-rotation (about 35 years) pine management (mostly loblolly pine). The timber management types for 85-90% of the National Forests in Texas are for 3 species of pine. Any further intensive timber management that would increase the control of competing hardwoods (reduce vegetative and wildlife species diversity on existing stands), or shorten the rotation of existing timber stands (which in essence controls the ability of surviving hardwoods in pine plantations to reach the canopy and produce mast) would make a bad situation for the overall wildlife community worse.

Page 1-14 Recreation. One important opportunity to meet projected demands for outdoor recreation not mentioned is improving the recreation experience by providing more quality wildlife habitat which in-turn would produce more game and non-game for public viewing.

Page 1-15 Wildlife and Fish. From a healthy and diverse wildlife resource standpoint, (opportunity 1) it would be desirable to modify the existing opportunities to improve habitats to include changing timber management types to a proportion that would more closely approach the wildlife community's needs; e.g. in East Texas about 10% of the vertebrate species that depend on forested habitats prefer essentially pure pine forests. On national forests property in the same area, pine management types make up about 85-90% of the acreage. Optimum composition of timber management types are 10% pine, 25% pine-hardwood, 25% hardwood-pine, 20% upland hardwood and 20% bottomland hardwoods in East Texas. It is recognized that some of the hardwood percentage is not possible because of the lack of suitable soil types, but it is also understood that the majority of this pine-hardwood ration will not come about because of the much higher dollar value of pine over associated hardwood species.

Opportunity 3 - In some cases it might be necessary to restrict access to property because of potential public abuse to sensitive vegetative and wildlife populations.

Page 1-18 Protection and Support. This section should mention an opportunity or interest to provide support to state and local law enforcement agencies to protect the wildlife resources from public abuse that occur on or adjacent to USFS property.

*This agency would suggest that an opportunity should be created to identify, protect and manage relatively small, unique vegetation communities; e.g. pitcher-plant bogs.

ALTERNATIVE RANKING

If it is important for the USFS to meet threatened and endangered species management objectives/recovery schedule by the year 2000, alternatives ranked in order of importance are 3, 7, 4, 6, 8, 5, 1, 2 and 9. If meeting threatened and endangered species objectives/recovery schedule at a later date is satisfactory, alternatives ranked in order of importance are 3, 1, 5, 7, 4, 6, 8, 2 and 9.

Alternative 3 (high non-market) was the preferred alternative because it provides for a large boost to the Recreation, Wilderness, Wildlife & Fish, Minerals & Energy, International Forestry and Protection and Support programs. Timber and Water outputs will at least meet current conditions, and Range is the only resource that will be reduced.

Alternative 9 (high productivity) was the least preferred alternative because as stated on pages 4-36 & 4-37 "This (alternative) would eventually result in more sensitive fish and wildlife species being federally listed as endangered and threatened.", and "These impacts on fish and wildlife habitat and populations will challenge agency relations with State Fish & Wildlife Agencies.".

The alternatives ranked between 3 and 9 were placed in the order of their perceived effects on the natural, wildlife and recreation resources of Texas.

M-167

COMMONWEALTH of VIRGINIA

Council on the Environment

SHEILA M. PRINDIVILLE
ADMINISTRATOR

903 NINTH STREET OFFICE BUILDING
RICHMOND 23219
804-786-4500

April 4, 1984

Mr. John E. Alcock
Regional Forester
United States Forest Service
Department of Agriculture
1720 Peachtree Road, N.W.
Atlanta, Georgia 30367

Dear Mr. Alcock:

The Commonwealth of Virginia has completed its review of the Draft Environmental Impact Statement on the 1985-2030 Resources Planning Act Program. The Council on the Environment is responsible for coordinating Virginia's review of federal environmental documents and responding to appropriate federal officials on behalf of the Commonwealth. The following agencies took part in this review:

Commission of Game and Inland Fisheries
Department of Agriculture and Consumer Services
Department of Conservation and Economic Development
State Water Control Board
Virginia Soil and Water Conservation Commission.

We would prefer to see Alternative 6 implemented, since it appears to provide the best balance between resource use and resource protection. Our preference is also based upon the greater involvement that the states would have in the program and the benefits that would accrue in the longer term (pages 2-25 through 2-34).

Additional comments are attached. Thank you for the opportunity to review this document.

Sincerely,

Keith J. Buttleman
(for Sheila M. Prindiville)

Enclosures

cc: The Honorable Betty J. Diener, Secretary of Commerce and Resources
Mr. Bruce B. Meador, Department of Conservation and Economic Development
Mr. John P. Randolph, Commission of Game and Inland Fisheries

FRED W. WALKER
Director
JERALD F. MOORE
Deputy Director

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FORESTRY
LITTER CONTROL
MINED LAND RECLAMATION
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COMMONWEALTH of VIRGINIA

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CLINTON V. TURNER, Richmond

DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT

DIVISION OF FORESTRY
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James W. Garner, State Forester

PLANS AND PROGRAMS
Resource Planning Act
Draft EIS 1985-2030

April 3, 1984

Mr. John Alcock
Regional Forester
USFS, SE Area
1720 Peachtree RD, NW
Atlanta, GA 30367

Dear John:

We appreciated the opportunity to participate in the review of the RPA Draft Environmental Impact Statement -- 1985-2030 Program.

Attached is a summary prepared by my staff, describing the effects of the nine alternatives on Virginia. We prefer Alternative 6. The outputs in this alternative are moderate in all areas and for that reason, are more reasonable and attainable. While neither the Virginia Forest Resource Plan nor the National Forest Plans were available at the time this alternative was prepared, there is provision for future input from state and federal plans.

Thank you for the opportunity for input.

Sincerely,

J. W. GARNER
State Forester

Enclosure

JWG/bh

Prevent Forest Fires—Keep Virginia Green

SUMMARY — RPA Draft Environmental Impact Statement — 1985-2030 Program

The Forest Service is considering nine alternatives. These nine alternatives consider budgets and accomplishments until 2030. Each alternative addresses the relative accomplishment in nine areas — Timber, Range, Recreation, Wilderness, Wildlife and Fish, Minerals and Energy, Water, International Forestry, and Protection and Support. The comparison of each alternative shows the effects of the alternative on the National Forests, State and Private, and Research programs. Attached is a pictoral illustration of the nine alternatives. Next is a quick summary of the nine alternatives as they relate to the Commonwealth of Virginia.

ALT. 1 - Would maintain constant outputs, at the 82 level, for goods and services. The only Budget increases would be to offset inflation. Increases in state programs would occur only under State budgetary initiatives. Reforestation levels would remain the same for the next 50 years, which would definitely hurt Virginia's forest economy.

ALT. 2 - This emphasizes high output of timber, range, minerals, and other MARKETABLE resources. There are no long term budget limits on this alternative. Timber sales on National Forests would increase by 82% by 2030. State and Private would increase significantly toward timber production and pest protection. This would benefit Virginia considerably in economic development, but at the risk of some environmental, aesthetic, and recreational activities. This would vastly change the way Virginia's two National Forests manage their lands.

ALT. 3 - Emphasis in Alt. 3 is on non-market outputs. While most S & PF funds would go toward timber production, increased emphasis will go toward wildlife, recreation, etc. This alternative would be beneficial to the Commonwealths citizens if it was implemented on the National Forests because of all of the intrinsic benefits that would be provided.

ALT. 4 - Produces high outputs in all areas. This would vastly increase timber sales on the National Forests. S & PF funding would be increased. This alternative because it maximizes the use of forest resource in all areas. Timber production would increase 268% by 2030. While the high outputs would benefit the Commonwealth, the balance of resources would not be appropriate for Virginia.

ALT. 5 - This alternative will create a decrease in all outputs due to a severe budgetary constraints. Significant reductions in National Forest production will increase pressure on state and private forest lands to meet demands for goods and services. There would however, be no Federal funding for S & PF programs. This alternative would have adverse effects on the VDF as well as the various users of the National Forests.

ALT. 6 - In preparing this alternative, National Forest and State plans were used. This alternative shows what would occur if plans were implemented. It should be noted that neither the VA FRP or the two National Forest Plans were used in formulating this alternative. Outputs in this alternative are moderate in all areas, and for that reason are more reasonable. A benefit of this alternative is regular input from states and National Forests as plans are updated.

ALT. 7 - While this alternative reflects budgeting in areas where the PNV of the funding investment is high, the outputs in two major areas timber and water, are only moderate. This is probably due to the high cost of building specification roads and other costs associated with National Forest timber sales.

ALT. 8 - The 1980 RPA Program Direction forms the basis of this alternative. Timber, wildlife and water outputs are only moderate.

ALT. 9 - Represented here is the high productivity of market outputs with emphasis on timber production. VDF is bothered by the low wildlife, fish, and wilderness outputs of this alternative.

What this means to Virginia

We are asked for our recommendations. The Draft document is fine, it's easy to read. The only confusing part is where outputs are measured in dollars.

As far as a preferred alternative, the Division prefers Alternative 6. Our work planning efforts must strive toward high accomplishment in all areas if we are to improve the forest of Virginia. The balance of outputs provided by Alternative 6 are the most reasonable if State, Private, and Federal Programs are to best benefit all interests in the Commonwealth.

Virginia Division of Forestry
Forest Resource Planning
March 13, 1984 — D.L.M.

M-169

COMMONWEALTH of VIRGINIA

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April 6, 1984

Mr. John E. Alcock
Regional Forester
1720 Peachtree Road, NW
Suite 804
Atlanta, Georgia 30367

Dear Mr. Alcock:

We appreciate the opportunity to review and comment on the Draft Environmental Impact Statement for the 1985-2030 Resources Planning Act Program. Time and resource constraints precluded an in-depth analysis of the alternatives.

Our interests are primarily water resources and protecting water quality, while still supporting economic growth and development. With this in mind, we strongly urge the adoption of alternative 4, to achieve high output levels of both market and non-market resources. We also urge that best management practices be required as a part of implementing the program.

Sincerely,

Robert W. Stapleford
State 208 Coordinator
Bureau of Water Control Management

/ltc

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JOHN SPELLMAN
Governor

DONALD W. MOOS
Director

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Mail Stop PV-11 • Olympia, Washington 98504 • (206) 459-6000

Washington State Department of Ecology
Comments on the RPA Program
Draft Environmental
Impact Statement

Water Quality

The discussions and alternatives concerning water quality were evaluated in terms of their impact on the environment as measured by our existing state water quality standards (Chapter 173-201 WAC).

The water quality standards classify all surface water in national parks, national forests and/or wilderness areas as Class AA or Lake Class (Section 173-201-070(1)). Fishery habitat is a protected use for both Class AA and Lake Class. The water quality standards require in Section 173-201-035(8)(c) that the existing water quality shall be protected and no degradation allowed unless it is clear that overriding considerations of public interest will be served and all substances discharged to these waters be provided with all known, available and reasonable methods of treatment before discharge. Further, Section 173-201-035(8)(f) states that "In no case will any degradation of water quality be allowed if the degradation interferes with or becomes injurious to existing water uses and causes long-term and irreparable harm to the environment." RPA alternatives 1, 2, 5, 8, and 9 tell of long term declines in fisheries habitat for Region 6 and, therefore, would violate Washington Water Quality Standards.

The RPA states that long-term water quality degradation will occur in alternative 4 and, therefore, would violate Washington's water quality standards. Alternative 1 showed no change in water quality and the rest of the alternatives showed improving trends. However, all of the alternatives except 1, 3, and 5 show significant increases in adverse soil disturbing activities which could have degrading effects on water quality. The EIS does not show how water quality can improve when adverse soil disturbing activities are increasing.

Even when water quality is mentioned, it appears that what is being discussed is really water quantity. Water quantity increases do not necessarily mean water quality increases - the opposite can be true in a number of cases - both long and short term.

If WDOE were to approve of a particular alternative in the EIS, it would have to be on the basis of not allowing fisheries habitat and water quality to degrade below their present levels plus striving for always improving conditions where these uses are substandard. Alternative 3 (High Nonmarket) would best serve water quality interests because it would improve fisheries habitat and increases in wildlife, fisheries and

watershed capital investments to improve riparian habitats which, in turn, would maintain and improve water quality.

Wilderness

The RPA program does not give sufficient consideration to wilderness designation in any of the alternatives. The maximum increase in wilderness is about one million acres for all of Region Six. Our congressional delegation has reached an agreement on a proposed wilderness bill which would add approximately this amount for Washington alone. Presumably Oregon is considering a similar amount, meaning that wilderness additions should be considered at the two million acre addition level. There does not appear to be an alternative that maximizes commodity production after making a "most likely" wilderness allocation. There needs to be this kind of alternative included as well as increasing the wilderness level in Alternative 3 to what is possible.

This means four levels of wilderness need to be reflected in the range of RPA alternatives as follows:

Current level:	2.7 million acres
Administration's Recommendation:	600,000 acres added
Most Likely:	1.02 million acres in Washington and 900,000+ acres in Oregon
Maximum:	2.5 million acres in Washington and a comparable amount in Oregon. (This should be the levels advocated by conservation groups)

Specific comments on alternatives -

Alternative 1 (Constant Outputs) - This is the current level of outputs as budgeted by Congress but it does not adequately address what seems to be the forthcoming result of wilderness legislation. Alternative 1 only adds 600 thousand acres to wilderness in Region Six, whereas more than that seems likely to be added in Washington State alone. (600 thousand is the administration's recommendation). The state's Congressional Delegation's compromise bill calls for 1.02 million acres of new wilderness in Washington State. Another 900,000 acres is being proposed for Oregon but to date does not have unanimous support of Oregon's delegation.

Alternative 2 (High Market) - This emphasizes commodity production which means no additions are made to wilderness. It would be more correct to plug in the minimum likely wilderness addition, 600,000 acres, and then do what can be done to emphasize commodity outputs.

Alternative 3 (High Nonmarket) - This should be the maximum wilderness alternative. It is not. Alternative 3 emphasizes nonmarket outputs (especially wilderness) but does not increase wilderness quickly enough.

Total wilderness is increased to 4.3 million acres in Region Six by 1990 and held constant for the remaining planning period. This is an increase of only 1.6 million. It would be more appropriate to put wilderness in at the maximum level advocated by conservation groups (2.5 million in Washington State alone) in order to show with one of the RPA alternatives what the impact of that level of designation would have. As it now stands this maximum wilderness alternative does not accommodate the "most likely" level let alone come close to the "possible" level.

Alternative 4 (High All Resources) - The emphasizes increases in all outputs but is still too low on wilderness. Again we have the same arguments for the "most likely" level as are described above.

Alternative 5 (Reduced Resources) - This reduces federal investments in renewable resources management to an unacceptable level because there is no increase in wilderness and very sharp reductions in timber production. This alternative would greatly affect the stability of the forest products industry as well as not realistically reflecting what is happening with wilderness designation.

Alternatives 6 (Implement Plans) and 7 (High Present Net Value) - These are both very similar plans with only minor differences in commodity outputs. It has not incorporated adequate levels of wilderness allocation. Alternative Six is in effect the region's preferred alternative as it is the Forest Service's best estimate of where the current forest planning is leading.

Alternative 8 (RPA Alternative) - This is the result of the allocation of resources as planned in the 1980 RPA program. This level was not funded by Congress (which is reflected in Alternative 1), but it is closer than most other alternatives on wilderness allocation.

Alternative 9 (High Productivity) - This is the current allocation of land with respect to wilderness, but with a significantly higher level of timber production. This represents the highest long term timber production level at the biological capacity of the forests but does not include any increase in wilderness.

Any questions should be addressed to Mr. Greg Sorlie, Supervisor, Environmental Review Section, Department of Ecology, Mailstop PV-11, Olympia, Washington, 98504 (phone (206) 459-6237).

JOHN SPELLMAN
Governor

WILLIAM R. WILKERSON
Director

STATE OF WASHINGTON
DEPARTMENT OF FISHERIES
115 General Administration Building • Olympia, Washington 98504 • (206) 753-6600 • (SCAN) 234-6600

March 30, 1984

USDA Forest Service
Region 6, Pacific Northwest Region
P.O. Box 3623
Portland, Oregon 97208

Gentlemen:

Draft Environmental Impact Statement
1985 - 2030 Resources Planning Act Program
(RPA)

The Washington State Department of Fisheries appreciates the opportunity to provide the following comments to the RPA Program. The DEIS was well prepared and the study guide was helpful in the review of the overall document. However, the job of focusing the entire program on the impact to the resources within the State of Washington that are within the authority of this department was still difficult.

In general, Forest Service lands within the State of Washington comprise the headwaters of most of the important salmon producing streams. The impact of activities within these managed lands has an effect not only directly but throughout the drainage basin. The RPA goals, though recognized as broad program statements, set the tone for administration on a Regional and a Forest level and thus have an impact on the resources within that unit. Some comments toward these broad goals follow:

1) Timber - The balance between timber output for domestic and export demands and other resource needs on forest lands can be tedious. Careful consideration is needed to temper the urge to justify these outputs over sound multiple use managements. **39**

2) Range - The use of the term "cost effective" can result in neglect of other resource in the promotion of range land use. The exploitation of range land can result in problems such as loss of fish habitat, water quality degradation and changes in flow pattern within drainage basins as well as problems for the land itself. **11**

3) Wildlife and Fish - The concept of "viable population" can lead to different interpretations. To assure only a "viable population" of tree species would not be viewed as a suitable goal when considering important **25**

commercial tree species; neither should it be a considered goal when considering important commercial or recreational fish species.

4) Minerals and Energy - This goal would lead one to believe that mineral prospecting, exploration and development would be done regardless of consequences to other resources and in concert with other resources only if possible. **7**

5) Water - Since Forest Service lands are in the headwaters of most of our streams, the impact on water yield can be very critical, both on amount and rate of run off. Recent flood damage within Washington State may be associated with forest practices. The cumulative impacts of forest practice activities are, therefore, very important in terms of their potential cumulative effects on downstream resources and uses. **3**

Opportunities

1) Timber - One of the opportunities identified to achieve this goal suggests an acceleration of harvest on National Forests in Washington, and other western states that have large inventories of old growth softwood timber. Region 6 would have a 31 - 50 percent share of the national total allocation of timber to be cut. This seems to be an excessive amount of the total burden, given the resultant negative impacts on the fishery resource and habitat, to be borne by the people and economy of this region. **10**

2) Range - The opportunity of constructing needed livestock improvements, such as fences (along streams) and water developments (stock watering devices), could be considered less than cost effective by themselves. However, they should be credited with the value from maintenance of good fish habitat, water quality and quantity, fish production, etc.

3) Wildlife and Fish - The integration of fish and wildlife objectives in the management of other forest and range land renewable resources is very important as previously stated. Much habitat has been lost as a result of past practices either through lack of knowledge or care. The development of best management practice (BMP's) to prevent habitat damage is paramount. The use of existing programs to improve habitat is needed to supplement the use of BMP's. A commitment to increase research efforts to improve or develop new technology to improve fish habitat should be coupled with research to protect habitat. This should include such topics as bank protection and its impacts on fish habitat, cumulative effects of forest practice activities, etc. **33**

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4) Minerals and Energy - The identified opportunity of ease of leasing and opening of access would indicate a push to encourage the development of minerals and energy without proper concern for short or long-term impacts of these activities. **7** **33**

5) Water - The statement concerning "striking a balance between the public concern for resource production and environmental protection" is unclear. Does one exclude the other? Water is a necessary item for fish production as well as for industrial, agricultural, and municipal production. Minimum stream flows for fish are needed to ensure productivity.

   Water yield should be approached with concern for rate as well as quantity to prevent flooding, increased erosion, sedimentation, etc.

Alternatives

Alternative 1 (Constant Outputs) - The constant output levels would remain the same for timber, grazing, wildlife/fish use, etc. It also states that "anadromous fisheries production would be constant at 110 million pounds through 2030". (What is the breakdown of these figures per region, state, species, etc?) However, it is also stated that all regions would suffer a habitat decline for anadromous fish by 5-15 percent. It would seem that there would be a detrimental impact on the fishery resource with the decline of habitat if production (harvest) remains constant.

Alternative 2 (High Market) - This alternative would emphasize high output of timber, range, minerals and other market resources. Fish productivity would generally decline due to impacts on fish habitat from road construction and use, timber harvesting, mining and grazing. Capital investments in the production of anadromous fish would probably not offset the loss. Research would emphasize mitigation or compensation rather than prevention of loss. A more balanced program is desirable.

Alternative 3 (High Non-Market) - This alternative would provide a decrease in timber harvest which would reduce the impact on Region 6 environmentally; however, it would have an economic impact on the forest industry to some extenz. The DEIS states an increase in commercial harvest of anadromous fish from 107 million pounds in 1986 to 150 million pounds in 2030. (How would this relate to Washington State and the economy for the fishery industry compared to changes in the forest industry? How were these figures derived?) It is estimated that there would be a 10 to 20 percent increase in anadromous fish habitat within the region. How would this be accomplished? **40**

Timber production would probably be increased on non-federal land to make up for lower volume on federal land. How would this affect overall fish habitat? The DEIS states that more technical assistance would be provided to state and private forestry for protection of soil and water resources as timber management activities increased. Does this imply that the increased timber production on non-federal land may have a greater or lesser **31**

impact than high market on federal land?

Alternative 4 (High All Resources) - Since there are trade offs that would have to be made to reach the national levels of timber production, the environmental impacts of this alternative would offset any other positive factors. A large percentage of the timber cut would come from the west and would result in habitat loss for the fishery resource. The DEIS states that capital investments would offset the adverse effects of commodity programs; however, it does not show any figures for increase or decline of anadromous fish habitat in Region 6. What are the estimates for this region?

Alternative 5 (Reduced) - This alternative would include a reduction in emphasis on maintenance of or improvement of fish habitat. There is not a figure as to the impact on Region 6. Is this figure available?

Alternative 6 (Implement Plans) - The curious point with this alternative is the fact that all of the Forest Plans have not been completed. It is therefore, a case of the cart before the horse. Some of the plans that have been completed would have to be reshaped to meet the RPA program. **41**

Habitat for fish is declared to generally improve under this alternative with a 10 percent increase in habitat for anadromous fish in Region 6. However, would this high-moderate emphasis on timber production cause an impact on fish production and habitat within the region?

Alternative 7 (High Percent Net Value) - This alternative would have a high emphasis on timber production at economically efficient levels and would be subject to meeting only the minimum legal requirements.

It is stated that fish habitat would generally improve, however, there are no figures for Region 6. Would this trend of improvement be true for Region 6 and Washington? If high emphasis is placed on timber with only minimal legal requirements in effect it would seem that habitat would be lost and fish production would decline.

Alternative 8 (1980 RPA) - This alternative would also have a high timber output goal that would result in an impact and a potential decline in fish production and habitat. The DEIS states that there will be a 5 percent decline in resident trout habitat in Region 6 but does not identify impacts to the anadromous species. Would it also be at a 5 percent level or greater?

Alternative 9 (High Productivity) - This alternative would produce the highest timber output with the least constraints. Since that output would concentrate a large portion of the cut on the western forests it would result in a decline in fish habitat and productivity.

Preferred Alternative

Alternative 3 (High Non-Market) would be preferred from a fishery point of view. High investment into fish habitat protection and enhancement would provide an increase in fish production. As stated, this could result in a 10 to 20 percent increase in anadromous fish habitat in Region 6.

Since timber production would be at a lower level, road construction would also be less and associated impacts from both activities would be less. This, in combination with the high investment in fish habitat should produce an increase in production of fish. The DEIS states a projected increase of commercial harvest of anadromous fish from 107 million pounds in 1986 to 150 million pounds in 2030.

This alternative leads to concern when the demand for timber is considered. Will this demand be met by increased cut on state and private forest lands? Would the technical assistance provided be adequate to protect the fishery resource and habitat on non-federal lands? **30**

A second choice of alternatives would be Alternative 6 (Implement Plans). If the Forest Plans were developed with local concerns for multiple use of Forest lands and the protection of fish habitat, this alternative would have merit. The use of the national goals to establish timber cut by region and its potential heavy impact on western forests is a draw back. The national goals and objectives should be developed from the information found in the Forest Plans, not the reverse. **35**

General Comments

In general the following points are noteworthy:

1) How were the economic analyses made for the anadromous fishery? The use of a national figure to relate to the individual Regions and especially Forests is inappropriate. This gives the impression of less importance of the fishery resource (salmon) to the overall economy.

2) The process of using national goals for establishment of Regional and Forest goals and allocations seems inappropriate. The Forests should recognize the preferred alternative in their Forests Plan that would be submitted to the Region and the Region thereby to the RPA Program. It seems that now the process will be used in reverse to dictate allowable (or required) cut in the opposite direction. **35**

3) There seems to be an emphasis on water yield. The resultant impacts on increased rate and quantity of water yield can have a detrimental effect if not carefully controlled. Blame has been given to forest practices for recent flooding activities. Careful consideration should be given to the cumulative effects of forest practice activities on federal land as well as in relationship to state and private forest lands. **3**

Thank you for the opportunity to review the DEIS for the 1985-2030 RPA Program. I hope the comments will be useful to you in your final review.

Sincerely,

Millard S. Deusen

Millard S. Deusen, Fish Biologist
Habitat Management Division

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JOHN SPELLMAN
Governor

FRANK LOCKARD
Director

STATE OF WASHINGTON
DEPARTMENT OF GAME
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March 29, 1984

Thomas E. Hamilton, Director
Resources Program and Assessment
USDA Forest Service
Post Office Box 2417
Washington, D.C. 20013

DRAFT ENVIRONMENTAL IMPACT STATEMENT:
1985 - 2030 Resources Planning Act Program

Dear Mr. Hamilton:

Washington Department of Game has reviewed your document as requested; comments follow.

The forest planning process can be a valuable tool for managing resources, and should become more useful over time, as data bases and methods of assessment are improved. However, we have serious reservations about the adequacy of this document for setting national forest policy and directing budget allocations. Analysis of certain values and impacts has been based on, at best, arguable assumptions. Arbitrary adjustments have been made to other values. In too many instances, substantiation of a critical judgment is missing. As a result, we feel that the offered range of alternatives is insufficient. **45**

These problems are evident in the treatment of fish and wildlife populations. Evaluation of effects for the nine alternatives is based on the assumption that certain key indicator species are adequate barometers for all wildlife. This concept can be valid if a full range of habitats, life cycles, and limiting factors is included. However, a survey of the species used by individual national forests in Washington generally shows less comprehensive coverage. **25**

Evaluation of alternatives also implicitly assumes that capital investment in mitigation projects is the controlling factor for increasing fish and wildlife numbers. Our experience is that such projects are valuable tools, but are generally more expensive and less effective than habitat protection. Thus, it seems unlikely that wildlife would encounter a net benefit from the higher market production alternatives. At best, this effect is not substantiated within the document.

In addition, there are other fish and wildlife issues which lack background evidence. The first, and perhaps most important of these, is the adequacy of forest data bases. The RPA program rests on aggregation of these figures. Yet we have found that the quality of these data among national forests in in Washington varies widely. A predominance of heavy harvest alternatives based on inconsistent data seems foolhardy. **40**

Secondly, there is no mention of how fish harvests are to be increased in the various alternatives. Of particular importance are anadromous species. Are stream buffers to be maintained in spite of higher logging commitments? Would there be reliance on opening new fish passage in selected streams, or on hatchery production? Because there is no recognition within the document for maintaining and enhancing wild anadromous stocks, the thrust of this program is unclear. **33**

As a third example, it is stated that all alternatives would meet legal requirements, but some legislative changes would be necessary for implementation of Alternative 9. However, it seems unlikely that obligations under the Threatened and Endangered Species Act could be met by more than half the alternatives. In any case, the document provides no substantiating link. **26**

Complicating the picture is the status of northern spotted owl. This species depends on large stands of old growth forest. In 1981, we suggested, in our response to a USFS Region 6 planning document, that the Washington and Oregon populations of this raptor were mutually isolated. Moreover, we believed that the Olympic population was isolated from that of the Cascades. Studies undertaken by this department have substantiated these facts. Because of this, a case for federal listing is being prepared. Each of the nine alternatives features departures in Region 6, likely based on liquidation of various amounts of old growth. It is unlikely that compliance with the Threatened and Endangered Species Act could be maintained for any alternative, given genetic isolation of spotted owl populations.

In addition, we have been informed that certain alternatives would lead to drastic losses of various indicator species' numbers on individual forests beyond the time frame shown in your current plan. Projections on each forest are made for a 150-year span. We do not argue with the choice of a 45-year period for your national plan. However, significant impacts incurred as a result of a given alternative at least should be described qualitatively if the public is to be informed and proper decisions are to be made. **34**

Similar questions arise from economic valuations. Assumption of horizontal demand curves for range-forest, water, recreation, non-commercial and commercial wildlife and fish, minerals, and energy is unrealistic. This leads to a bias toward timber, especially over time. USFS land provides significant quantities of these affected resources. Also, fish and wildlife populations must be considered relatively inelastic in the upward direction. Supporting habitat is ultimately fixed, and enhancement projects are subject to severely diminishing returns to scale. In contrast, timber supplies and roaded recreation opportunities are capable of greater expansion. It would seem, therefore, that fish and wildlife are relatively undervalued by the given methodology. **43**

The assumption is also made that increased water yields are a positive benefit. This in turn implies that they can be sufficiently controlled. We seriously question this assumption. It should be noted that higher flows would not ordinarily occur when they are most needed. Although budgetary constraints may allow some bank and channel protection on national forest land, downstream sites remain at risk. Increased yields would cause more frequent occurrence of dominant-discharge or higher stream flows. Channels would be scoured more often; greater bank erosion would occur. Expensive control structures would be necessary to lessen these impacts. Secondary costs of higher water yields not considered by the DEIS include bank protection costs, loss of spawning potential giving lowered fish production, increased dredging requirements in estuaries where the higher sediment load is dropped, and direct and indirect costs of impoundments to avoid the downstream impacts. **3**

Additionally, we strongly question what appear to be arbitrary adjustments to wildlife values (page F-12) and recreation values (page F-6). With the latter, we support the attempt to give a range of benefits; however, the across-the-board 50 percent reduction lacks substantiation. Similarly, a 37.5 percent reduction in wildlife value must be backed by sensitivity analysis before the assumption of linearity between price and demand can be accepted. We suspect the unadjusted figures are more accurate. **43**

Generally, too little information is given on the analytical process. It is not clear how fish and wildlife resource levels and related commercial activities were linked. For example, are fishery values imputed from fishing activities taking place on USFS land, from activities associated with production from USFS land, or from fishing opportunity affected by activities on USFS land? Do results reported for each alternative represent true aggregations, or have undocumented adjustments been made? **45**

For all the foregoing reasons, we believe that the range of alternatives is insufficient. It is admitted that Alternative 9 would require a change in the law to be implemented. Alternative 4 is a hybrid of numbers 2 and 3 applied to individual forests. Every alternative entails departures for Region 6. Compliance with the Threatened and Endangered Species Act is impossible for some alternatives even with current listings. The condition of northern spotted owl further decreases the number of complying alternatives.

In formulating a realistic range, we suggest that any plan that would not comply with existing laws (e.g., Alternative 9) be eliminated. At least one alternative that does not involve departures should be included. At least one alternative should meet established state goals for management of fish and wildlife. **20**
Valuations should be made on realistic assumptions, and latest information should be used. Sensitivity analysis should be applied where appropriate to substantiate value adjustments, and should be used to measure the effects on PNV from different discount rates. More detail should be included on analytical methods. Finally, uncertainties inherent in existing data bases and in application of the indicator species concept should lead more realistically to a range of possible values within each alternative. **45** **25**

In conclusion, we do support the planning process. However, we recognize that it is a young process; methods are evolving and background information is only now being developed. Generally, we would support an alternative which did not pose a risk of wildlife population declines. Budgetary expenditures on habitat enhancement, as in Alternative 3, would be helpful. Uncertainties within the planning process demand a conservative approach vis-a-vis high market production choices. These alternatives could lead to significant declines in the fish and wildlife base which supports high PNV recreation opportunities. A choice for such a path should not be made on uncertain information.

SPECIFIC DETAIL FOLLOWED THIS SUMMARY. IN THE INTEREST OF SAVING SPACE, WE HAVE OMITTED THIS SECTION. HOWEVER, RPA HAS THESE COMMENTS ON FILE AND THEY ARE AVAILABLE FOR REVIEW.

Thank you for giving us the opportunity to respond to your document. We hope these comments will be helpful in forming a stronger national plan.

Very truly yours,

THE DEPARTMENT OF GAME

Frank R Lockard

Frank R. Lockard
Director

FRL:cv
cc: Agencies
Regions

M-175

JOHN SPELLMAN
Governor

ROBERT L. WILDER
Director

STATE OF WASHINGTON
INTERAGENCY COMMITTEE FOR OUTDOOR RECREATION
4800 Capitol Blvd., KP-11 • Tumwater, Washington 98504 • (206) 753-7140 • (SCAN) 234-7140

March 21, 1984

U.S. Forest Service
319 S.W. Pine Street
Box 3623
Portland, OR 97208

Dear Sir:

We have studied the draft report/environmental impact statement that concerns the nationwide 1985 Resources Planning Act Program. The following are some general observations related to portions of the text.

It was rather difficult to evaluate this proposal because of its excessive length and overwhelming amount of information presented. For our review purposes, we concentrated on the recreation, wilderness, and research portions of each alternative. Pages 2-46 through 2-95 which compared alternatives proved invaluable in this process.

Two of the alternatives appear amenable to recreation and other non market values. Both #3 and #4 provide increased capacity for all recreation. Trail rehabilitation has been emphasized, although total capital investment in recreational facility construction/reconstruction is higher in other alternatives. Both #3 and #4 are attractive in terms of research efforts. Althernative #3 directs research "to produce high output levels of water, wildlife, outdoor recreation, and other non market values..." (p. 2-17). Likewise in #4, "significant increases in research would also occur in outdoor recreation and urban forestry." (p.2-21)

We feel this research effort is critical to keep pace and meet the increasing demands for forest recreation. The Forest Service provides excellent opportunities in this state for recreation. What your agency does, or fails to do, has a marked impact on statewide recreational patterns. We urge you to strongly consider either alternative #3 or alternative #4 in your deliberations.

Thank you for the opportunity to comment.

Sincerely,

Gerald W. Pelton

GERALD W. PELTON, Chief
Planning Services Division
GWP/LAA/jml

Department of Natural Resources
OLYMPIA, WASHINGTON
98504

BRIAN BOYLE
Commissioner of Public Lands

March 29, 1984

Mr. Donald W. Moos, Director
Department of Ecology
Lacey, WA 98504

Dear Don:

I am writing to transmit Department of Natural Resources' comments on the Forest Service's draft Resources Planning Act Program and EIS. I understand the Department of Ecology is coordinating a response by the state executive agencies, due to your agency expertise regarding NEPA review. I believe it is desirable to have a unified state response to the Forest Service, and I am pleased to participate with you in developing that unified position.

Our attached detailed comments analyze each of the nine draft program alternatives and indicate that alternative 6 is a preferable starting point for developing a final RPA program. The desirable features of this alternative include a high level of support for governmental assistance to private forest landowners and industry and a high level of fire and pest management. It also includes a good balance between needed market resource production and protection of non-market resources.

I believe the overall state response to the Forest Service should indicate the importance of local forest planning for state and private, as well as Federal lands. Local planning is most sensitive to local needs. For example, Washington State's resource management and protection needs are different from those of the East and South. Forest Service programs and research should be designed to be applicable to specific resource situations.

We believe the Forest Service has continually improved the RPA process over the past ten years, making it easier to review and comment. I anticipate further improvement in the future. We would particularly encourage the Forest Service to consider reducing the number of alternatives presented for review by combining alternatives that may be different theoretically but not practically. We also think the economic and other technical assumptions underlying the program, such as discount rate, should be made more explicit. Finally, we hope there will be continued improvement in documenting the linkage between individual forest planning and the regional and national RPA effort.

Equal Opportunity Affirmative Action Employer

We appreciate the opportunity to present these comments and to work with you in developing a state response on this important issue.

Sincerely,

Art Stearns
Supervisor

AS:cpa

Attachment

STATE OF WEST VIRGINIA
DEPARTMENT OF NATURAL RESOURCES
CHARLESTON 25305

JOHN D. ROCKEFELLER IV
Governor

May 4, 1984

WILLIS H. HERTIG, JR.
Director

RONALD R. POTESTA
Deputy Director

Regional Forester
Eastern Region, Forest Service, USDA
310 West Wisconsin Avenue
Milwaukee, Wisconsin 53203

Dear Sir:

The appropriate divisions of the West Virginia Department of Natural Resources (WVDNR) have reviewed the Draft Environmental Impact Statement (DEIS): RPA 1985, and submits the following comments.

The RPA report, which sets national goals and outputs for the U. S. Forest Service (USFS), represents the long-term management direction of the USFS. This management direction is vitally important to the citizens of West Virginia as the USFS administers and manages approximately one million acres within our state.

After reviewing the above-referenced document, it is apparent that no one alternative can meet all the demands now being placed on federal lands managed by the USFS in West Virginia. In general, the magnitude and diversity of topics considered, along with the document format, resulted in a presentation that was difficult for evaluation and decision-making purposes. The degree and distribution of activities arrayed for each alternative, for the most part, had very little balance, presenting either/or choices. If a balanced alternative was presented, it was not apparent.

Cooperative USFS-WVDNR programs have been important in the management of our national forests. These programs have been crucial to the recovery of deer, wild turkey, beaver, bear and a host of nongame species in our state. Under our present cooperative program, the WVDNR Wildlife Resources Division (WRD) spent approximately $447,000 this past fiscal year for wildlife management activities on West Virginia's national forest lands. Since the major portion of national forest land is situated in the most unique avian fauna region of the state, it provides high quality wildlife habitat and other biological and recreational benefits. Many of our finest native and stocked trout streams are found on national forest lands. Mature forest represent the preferred nesting habitat for 65 percent of the forest dwelling birds in our state. Fifty percent of West Virginia's federal listed threatened and endangered species occur on national

forests. It follows that this is important to this department's role in the management of our state's natural resources.

When the USFS acquired the national forest areas, the bulk of these lands had been mismanaged to the detriment of forestry, wildlife, water, aesthetic and recreational values. Under USFS management programs, much has been accomplished in West Virginia. The forest fires that plagued this area are no longer the problem of the past. Cut-over abused forest stands have been improved immeasurably. Trout streams silted and unprotected by shading have returned to productive postures. Big game populations are not now restricted to the remotest locations as a result of your management of this forest area. Beaver and fisher populations have improved. The majority of the wild turkeys utilized for early restoration efforts were trapped on national forests. Aesthetics, so important to the state's tourist industries, has over a short span of years improved tremendously.

In view of the past record of accomplishments that have been made on national forest lands in West Virginia, the expanded public demand for greater uses of these lands in addition to the management skill that will be required to maintain the present level of management, this department views the goals as proposed in the RPA Draft DEIS, if implemented, as jeopardizing accomplishments of the past and progress that will be required to meet expanded public needs.

The WVDNR contends that if the USFS is going to follow a concept of multiple use management, other areas besides wood and wood products should be emphasized. Public demand for recreation activities, hunting and fishing opportunities, and federal mandated improved water quality appear to be available as side benefits in this long-range concept. These natural resource functions should receive equal standing in the planning process. The increasing demands by the public for these activities on public lands should be met as much as possible under the RPA planning guidelines. This inconsistency with the multiple use philosophy has placed excessive emphasis upon timber production on lands mandated to multiple use management. The goals, as set forth in the subject document, verify and substantiate this contention. The national goal for timber is as follows (emphasis added):

> Meet growing domestic and export demands for wood products by using economic opportunities for management and assistance and by development of new technology to increase and extend timber supply while protecting the environment and providing opportunities for wildlife, recreation and other multiple uses of forest lands.

This goal statement constrains all management alternatives, from their inception, by the condition that the USFS must meet the nation's demand for wood products. Goals dealing with the other components of multiple use are constrained in ways (e.g., where cost effective, consistent with other resource uses and values) which effectively limit their infringement upon timber production. The timber goal has no such constraints. Other multiple use goals are as listed below (emphasis added).

Range

Provide forage to promote the economic stability of dependent livestock producers and rural communities by maintaining the current level of forage production on national lands, and expanding this level of production. Develop and apply technology, where cost effective, to improve range conditions and to coordinate livestock and other multiple uses of rangeland.

Recreation

Provide outdoor recreation opportunities and experiences by providing access, services and facilities, where cost effective, that are necessary to meet the national forest system share of the nation's demand for outdoor recreation, consistent with other resource uses and values. Provide technology to improve and extend recreation opportunities. Move toward recreation users assuming a greater share of the cost of providing recreation opportunities.

Wildlife and Fish

Assures a diverse, well-distributed pattern of habitats for viable populations of wildlife and fish species in cooperation with states and other agencies. Provide technology and manage habitat to help recover threatened and endangered species and increase the productivity for native game and nongame species consistent with other resource uses and values and user demands.

Water

Provide for favorable conditions of waterflow, help provide for consumptive and nonconsumptive uses of water and help meet long-term water quality needs through management, assistance and technology. Increase water yields where cost effective and values. Reduce flood losses where economically feasible.

Protection and Support

Commensurate with natural resource goals for forest and rangelands, plan and executive cost effective protection and program support in facilities, fire, pests, lands and other supporting activities. Emphasize prevention and where appropriate, mitigation of resource loss and damage. Cooperate with local, state, other federal agencies and private landowners in research, forest pest management, wildland fire management and other resource protection programs. Participate in economically productive human resource programs that support community development and stability.

Basically, the execution of the USFS timber management program, as presently outlined, need not be cost effective or consistent with other resource uses and values. The WVDNR recognizes the importance of the timber industry in West Virginia and that timber production is a legitimate component of multiple use philosophy. This department does not support a plan which establishes timber production as the dominant forest product to which all other uses are subservient.

On page two, the document states that goals should describe a future resource situation. It is readily apparent that the above-listed goals state only what the USFS will provide.

The supply/demand situation for various products is difficult or impossible to analyze. The various alternatives depict outputs the USFS intends to produce. Any jobs lost in timber-related occupations could be offset by job opportunities in recreation, mineral extraction and other activities.

The above general comments reflects a concensus of positions by this department. However, it is readily apparent by the following statements of the involved WVDNR divisions, that no one alternative satisfactorily represents all disciplines represented.

Division of Forestry

The WVDNR Forestry Division views Alternative #2 as a viable alternative if the USFS can get pass-through funds to meet the targets. However, Alternative #4 appears to be the best method of managing public land since it emphasizes equally the multiple resource management concept of wood, water, wildlife, recreation, etc.

Alternative #4 would gain the most support providing the preparers of future requests recognize the political climate of each future Federal fiscal year. It is reasonable to predict that Alternative #5, with its dependency upon more state, local and private sector financing, will be mandated if the Federal deficit is to be reduced. Therefore, an amended Alternative #4 is recommended with the provision that the state, local and private sectors pick up more of the costs. The elimination of so many special RC&D, watersheds, etc. multiple agency requests and letting such determination of program emphasis be on a state basis should release federal dollars to put practices on the ground rather than into overlapping overhead.

Division of Parks and Recreation

The WVDNR Division of Parks and Recreation attempted to balance all land uses to attain an optimum use of national forests rather than maximum usage.

To this end, Alternative #3 is recommended by this division as it emphasizes not only recreation, but also wilderness opportunities, increased fish and wildlife management, improved water quality and moderately high mineral and energy production. Although timber production is at a low to moderate level, productivity would reach 85 percent of long-term sustained yield by the year 2030.

Division of Reclamation

The WVDNR Division of Reclamation emphasizes Alternative #2, #6, and #8 because of a high degree of research directed toward mining.

Division of Water Resources

The WVDNR Water Resources Division contends that overall this document does not appear to do justice to its purpose when considering the magnitude, diversity and time frame for the proposed activities.

It is extremely difficult, given the discussions of the proposed alternatives effect on water quality, which was very limited, to state definitely which alternative is best suited to maintaining/enhancing water quality. Furthermore, the document does not adequately assess the impacts to water quality and quantity, for those alternatives proposing substantial increases in water yield.

Of the alternatives presented, the most beneficial to water quality appears to be:

National Forest System	---	Alternative #3
State and Private Forestry	---	Alternative #2
Research	---	Alternative #8

Alternatives #6 and #9 appears to be totally unacceptable for maintaining/enhancing water quality.

Division of Wildlife Resources

The WVDNR feels that the national goals for wildlife and fish do not address maintenance of plant species or the necessity of research to determine habitat components and amounts necessary to maintain viable populations of animals. Other problems include incongruous rationale in determination of outputs for various alternatives e.g., in Alternative #5, wildlife and fish user days decrease in the face of a 5 percent decline in fish and wildlife carrying capacity, while in Alternative #9, fish and wildlife user days increase in lieu of a 20 to 40 percent decline in fish and wildlife carrying capacity.

While much of the publicity concerning dismay with USFS planning is currently centered in the West, the problems apply equally to eastern states. WRD participation in individual forest planning in West Virginia indicates extensive planned road development and timber harvest. Present intentions are to develop 4 miles of road per square mile of forest in the general forest zone which makes up the bulk of national forest.

In the past, major public USFS controversy has involved timber harvest on national forests. The Monongahela National Forest was the focal point for a clearcutting controversy only a few years ago. West Virginians are concerned about management on their national forests.

It is the recommendaation of the WVDNR that the USFS redevelop RPA goals that allow a fair mix of multiple use alternatives that permit citizens to effectively choose the management direction they prefer for these important public lands.

Sincerely,

Willis H. Hertig, Jr.
Director

WHH/hws

cc: Division of Forestry
Division of Parks and Recreation
Division of Reclamation
Division of Water Resources
Division of Wildlife Resources

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES
Carroll D. Besadny
Secretary

Rhinelander Ranger Station
Box 576
Rhinelander, Wisconsin 54501

April 2, 1984

Eastern Region
U.S. Forest Service
The Henry S. Reuss Federal Plaza
310 W. Wisconsin Avenue
Milwaukee, Wisconsin 53203

Dear Sirs:

Below are my comments on the Draft Environmental Impact Statement for 1985 Resources Planning Act Program.

Page 3: Wildlife and Fish. The goal is well-written and comprehensive. However, to accomplish this goal I believe the Forest Service has to address three areas:

1) Increase the budget for wildlife habitat work.
2) Increase the rate of land acquisition to protect and block critical wildlife habitats. Examples for Wisconsin would include bald eagle and osprey nest site, trout waters and loon nesting lakes. In the long run, land blocking will be a critical limiting factor in wildlife habitat management.
3) Increase wildlife personnel. Each Ranger District should have a technician (trained in wildlife management) to carry out the Sikes Act or Forest Plan wildlife management activities on the District. On-the-ground field personnel can influence other Forest Service personnel (marking crew, Compex forester, etc.) to make decisions based on wildlife considerations. The Forest Service cannot carry out wildlife habitat improvement without personnel trained in wildlife management.

Page 4: Alternative 2 (High Market). I believe this alternative is unacceptable to a public resource management agency. The Forest Service has multiple use responsibilities that are incompatible with this alternative. The private sector through tree farms, ranches and mineral companies will provide maximum output levels of timber, range and minerals. The National Forest System has a much greater and harder job - multiple use. **39**

Page 5: Alternatives 4 & 9 (High Productivity). See comments on Alternative 2.

Page 1-11 and 1-12: Opportunities to increase the timber goal. Several opportunities described here conflict with the wildlife, fish, wilderness and water recreation area. For example, converting existing stands to desirable species (red pine in the East) conflicts with wildlife habitat opportunities. Accelerating harvests of old growth in Washington and Oregon conflict with wilderness, wildlife (see Schoen et al. 1983 "Wildlife - Forest Relationships: Is a Reevaluation of Old Growth Necessary?" Trans. 46th N. Am. Wildl. Conf. p. 531-544 and Heinrichs, J. 1983 "Old Growth Comes of Age" J. Forestry Dec. 1983 p. 776-779 and anadromous fish runs. **33**

Liquidating western old growth will reduce demand for only several decades. The Forest Service should begin a program now to reduce demand. Timber demand can be reduced by extending supplies through improved utilization and increasing net annual growth.

Page 1-15: Wildife and Fish Opportunity Area. This section does an excellent job of outlining a program for wildlife work on the National Forest. However, my concerns expressed in paragraph 2 above must be met - larger wildlife budgets, more personnel and acquisition of key water, wetland or critical habitat tracts.

Chapter 2: The Program Alternatives and Their Comparison. Based on my professional interests in wildlife management, I support:

1) Alternative 6 (Implement Plans)
2) Alternative 7 (High Present Net Value)
3) Alternative 8 (1980 Resource Planning Act)

The other alternatives contain too many compromises for wildlife.

Thank you for this opportunity to comment.

Sincerely,

Ronald G. Eckstein

Ronald G. Eckstein
Wildlife Manager

RGE:kjh

M-180

THE STATE OF WYOMING

ED HERSCHLER
GOVERNOR

Game and Fish Department

CHEYENNE, WYOMING 82002

W. DONALD DEXTER
DIRECTOR

February 29, 1984

EIS 2117/L1
USDA/FS
Draft EIS 1985-2030
Forest and Rangeland
Renewable Resources
Planning Act

Mr. Thomas E. Hamilton, Director
RPA
USDA-Forest Service
P.O. Box 2417
Washington, D.C. 20013

Dear Mr. Hamilton:

Though the outcome of this EIS, in providing direction for Forest Service activities, may potentially determine the amount of consideration given to fish and wildlife resources on Forest Service land in the future, the general nature and scope of the document make it difficult to formulate specific comments.

At this stage, no preferred alternative has been identified by the Forest Service. For the protection of fish and wildlife resources, we would prefer Alternative 3, which emphasizes high output levels of non-market resources. Alternatives 1, 2, 5 and 9 would be the least desirable from a fish and wildlife standpoint. Though alternatives 4, 6, 7, and 8 represent slightly less emphasis for fish and wildlife than alternative 3, they are nevertheless acceptable and probably represent a more realistic balance of all the resources involved.

Please contact this office at any time we may be of further help.

Sincerely,

Francis Petera

FRANCIS PETERA
ASSISTANT DIRECTOR
OPERATIONS
WYOMING GAME AND FISH

FP:HBM:blg
cc: Game Division
Fish Division
State Planning Coordinator

M-181

Department Of Energy

Western Area Power Administration
P.O. Box 3402
Golden, Colorado 80401

APR 9 1984

Regional Director
Rocky Mountain Region
U.S. Forest Service
Department of Agriculture
11177 W. 8th Avenue
P.O. Box 25127
Lakewood, CO 80225

Dear Sir:

The Western Area Power Administration (Western) has reviewed the draft environmental impact statement (EIS) for the 1985-2030 Resources Planning Act Program and offers the following comment:

The draft EIS does not address the potential demand on National Forest resources by utilities. Western requests that transmission line corridors be considered as legitimate uses of National Forest resources. The establishment of utility corridors places a demand on timber production, wildlife and recreation, but with planning can be done in a manner which is harmonious with Forest plans and meets the needs of the utility industry. We suggest that identification of potential corridors that are reasonable and allow for future expansion, is as valid a planning element as planning for mineral exploration and energy development. We recommend that utility corridors be recognized as an opportunity area or be included under another heading which fits the organization of the EIS. Futhermore, buffer and expansion areas adjacent to existing corridors should be identified. This is important because of the Forest Service's inclination toward establishing wilderness and roadless areas bordering along existing rights-of-way.

Western desires to deliver electrical energy in a cost-effective manner, while taking into account environmental concerns. Early cooperation and coordination between the Forest Service and utilities will help ensure that cost-effective pathways from electrical generation plants to energy markets are identified in a timely and efficient manner. We request that the Forest Service consider allowing the participation of Western and the Western Utilities Group in preparing the final EIS.

We appreciate this opportunity to comment on the Resources Planning Act Program.

Sincerely,

Gary W. Frey
Director of Environmental Affairs

United States Department of the Interior

FISH AND WILDLIFE SERVICE
ENDANGERED SPECIES OFFICE
1406 FEDERAL BUILDING
125 SOUTH STATE STREET
SALT LAKE CITY, UTAH 84138-1197

IN REPLY REFER TO

March 2, 1984

Mr. Stanley Tixier
Regional Forester
Federal Office Building
324-25th Street
Ogden, Utah 84401

Dear Mr. Tixier:

We have reviewed the 1985-2030 Resources Planning Act Program Draft Environmental Impact Statement (RPA-DEIS)sent to us by your office. We strongly encourage the choice of resource management plans which are most consistant with the intent of the Endangered Species Act of 1973. National Forests within the Utah portion of Region 4 of the Forest Service provide habitat for many threatened and endangered animals and plant species and many more species under review for possible listing in the future (sensitive species). Of the nine proposals discussed in RPA-DEIS you have already identified those which would be most beneficial for wildlife and endangered species in particular i.e: alternative 3,4,6,7, and 8. We are most anxious to review and comment on specific Forest Plans which may affect endangered species and their habitat.

Sincerely,

John L. England
Acting Field Supervisor

M-182

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Folsom Resource Area
63 Natoma Street
Folsom, California 95630

IN REPLY REFER TO
1793
(C-018.8)

APR 4 1984

Pacific S W Region
630 Sansome St.
San Francisco, California 94111

Gentlemen:

This is in response to your request for comments on your DEIS for the 1985 RPA Program.

In reviewing the summary, it appears that the goal for each opportunity area is sound and clearly stated. Alternative 4 seems to have the most productive and best balanced blend of multiple use management goals. It provides ample returns for moderate costs. Alternatives 2, 6, 7 and 9 are also quite productive, but at the expense of the balance found in alternative 4.

Alternative 8 shows a favorable return to the treasury, but it may be short sighted to favor wilderness over timber production.

It is impossible to predict the future demands by today's programs. Alternative 4 may create a sound base from which to meet unpredicted demands of the future.

Thank you for the opportunity to comment.

Sincerely,

D. K. Swickard
Area Manager

M-183

Department of Energy

Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208

In reply refer to: SJ

April 4, 1984

Mr. Thomas E. Hamilton, Director
Resources Program and Assessment
USDA Forest Service
PO Box 2417
Washington, DC 20013

Dear Mr. Hamilton:

Thank you for the opportunity to review the Draft Environmental Impact Statement - 1985-2030 Resources Planning Act Program. We have already submitted the following comments to the Pacific Northwest Regional Forester at his request.

1. Page 3, National Goals for Minerals and Energy: The existing goal addresses only minerals. This goal should be expanded to address the need to "provide for energy transportation and renewable energy resource development." Such a goal would be consistent with the requirements of FLMPA and FS directives and regulations. 6

2. Page 16, Minerals and Energy Opportunity Areas: The following suggested opportunities could be added:

- o insuring that energy corridor options are retained for future generations;
- o insuring that renewable energy resources are identified and protected as future energy options;
- o strike a balance between the public's need for energy and environmental protection;
- o streamlining leasing and permitting processes to reduce certain financial and market risks and to enhance development of energy resources.

Addressing the goals of renewable energy resources and energy corridors in the Resource Planning Act Program will give these resources the emphasis needed in the Forest Service planning process. Public lands are an invaluable source of

hydroelectric, wind, biomass, and geothermal energy resources. These lands are also essential for the development of effective, reliable energy transportation systems.

Sincerely,

Anthony R. Morrell
Environmental Manager

cc:
Earl Reinsel - USDA Forest Service, R-1
Ernie Nunn - USDA Forest Service, R-4
John McArthur - USDA Forest Service, R-5
Ed Bennett - USDA Forest Service, R-6

U.S. Department of Housing and Urban Development
Portland Area Office, Region X
Cascade Building
520 SW Sixth Avenue
Portland, Oregon 97204

FEB 28 1984

Mr. Robert Devlin
Forest Supervisor, Rogue River
National Forest
333 W. Eighth St.
Medford, OR 97501

Dear Mr. Devlin:

SUBJECT: Unroaded Areas Response and RPA Response

We have reviewed the material transmitted with your February 5, 1984, letter and provide our general analyses in two parts: 1. Rare II - Unroaded Areas, Rogue River National Forest and 2. Pacific Northwest Region Study Guide DEIS 1985-2030 Resources Planning Act Program.

We defer to your judgment selection of any alternative or combination of alternatives.

Rare II - Unroaded Areas, Rogue River National Forest

In reviewing the roadless area map we noted that virtually all Rare II non-conforming use areas and Rare II additions were on the periphery of Rare II area boundaries excepting for Kinney 6148, Little Grayback 6147 and the Oregon portion of Kangaroo 6703. There, peripheral incisions penetrate into the areas to exclude unification as cohesive areas. This could be due to utility corridors, non-Federal lands, etc. but it leaves the impression that controls within those fractured areas would be difficult to administer.

Since the Pacfic Crest Trail passes through so many of the roadless areas it would be very helpful if the trail was depicted on the map in a prominent manner.

The Brown Mountain area except for containing part of the Pacfic Crest Trail seems to have little recreation, timber or grazing opportunity and contains about 3,400 acres under an issued oil and gas lease. Excepting for the lava bed features which may be considered geologically unique the area seems to present itself as undevelopable excepting for oil and gas exploration and as a tourist point of interest.

The Condrey Mountain Roadless Area, although in California, does contain important water resources as the runoff feeds both the fisheries in the Klamath River and water storage in Applegate Lake.

Pacfic Northwest Region Study Guide For DEIS
1985-2030 Resources Planning Act Program

The information contained in the graphs and explanatory text seem to establish the following overview parameters:

Timber

None of the Region 6 graphs on page 20 seem to demonstrate long term sustained yield. This would seem to be the most critical element a forest could address. The national level reflects a dramatic increase in timber offered while Region 6 generally shows an increase in offerings to 1990 and then a decrease by the year 2030.

Grazing

Most alternatives reflect increased grazing although it has been listed as a "poor return on investment". If, in a sense, the multiple uses are somewhat competitive with each other increased grazing may need a closer look. 11

Recreation

All but one alternative (5) reflect an increase in RVD's. Is the dramatic increase after 2030 predicated on extrapolation of 1945-50 baby boom data or merely a reflection of the 40 year time span?

Is the increased intensity of use to be accommodated by higher density recreation, anticipation of flexible time availability due to changes in working conditions or more land for recreation use?

Wilderness

Wilderness in Region 6 seems to be represented by constant acres except for alternatives 3 and 8 which reflect increased emphasis. It appears from other data furnished that many unroaded areas have been removed from wildnerness designation since their original inventory for Rare II.

Wildlife and Fish

WFUDS (user days) increase dramatically in year 2030 for almost all alternatives. Like recreation, is this also an extrapolation of "baby boom"population or is there another basis such as 40 year time span covered?

Energy Minerals

Increased quadrillions of BTU's are reflected in all but two alternatives. However, the dramatic increases reflected for the year 2030 do not merely appear to be the product of the 40 year time frame. The 1986-1990 increment does not extrapolate to the 2030 conclusion for each alternative. Is the assumption that a time lag could be anticipated for start-up?

Water

The water yield increases in thousands of acre feet even for the "constant outputs" and "reduced" alternatives. Is there a "natural phenomenon" at work? **3**

As noted, water quality is not addresseo.

National Forest Cost

Although all but two alternatives reflect increasing costs there seems to be a disportionately low increase reflected in the 1990-2030 period compared to the 1986-1990 period. Some of the more dramatic increases reflected in the year 2030 for intensified use would lead one to anticipate a higher cost to support that contention. **46**

The Region 6 costs actually show declines to levels lower than 1986 after 1990 for all but alternative 9.

This does not seem to support projected increased intensity of use.

State and Private Forestry

It was mentioned that only about 12% of the 1.6 billion acres addressed is located on National Forests. Does this mean 1,408,000,000 acres are in State and private forestry? It then seems strange that only one-tenth of 1% of that land is reflected in the year 2030 "High Market" alternatives for "Reforestation". **30**

The "Total Cost - S&PF" increases for all alternatives excepting "Constant Outputs" and "Reduced". It is interesting that the "High Market" (alternative two) which includes the highest reforestation acreage is barely more costly than the "Implement Plans" alternative 6.

The increasing resource production anticipated from State and private forestry through cooperative efforts is reflected in projected costs.

Economic Factors

Forest Service commodity receipts appear rather stable for all alternatives until the year 2030 which reflects significant increases. This does not relate to the "Total Cost - S&PF" graph directly. It is also difficult to relate to the time frame of "Reforestation" and maturity of that effort.

Are the large increases in 2030 largely attributable to the 40 year time span covered by the graph for 1990-2030?

Total Cost-Research

It was interesting to note that "High Market" alternative two was more costly in 1990 than "High All Resources" alternative four but by 2030 the cost was the same.

On the other hand "High Productivity" alternative nine was less costly except in 1986.

Alternative four "All Resources" appears to be one that addresses the NFS goals, goals for S&PF and reasonably addresses research needs all within what appears to be achievable parameters for 1990. **46**

In an informal but complex ranking structure the three top ranking alternatives were as follows:

First - Alternative 8 - 1980 RPA
Second - Alternative 7 - High PNV
Second - Alternative 4 - High All Resources

Alternative eight was first based on the assumption that increased research cost always meant needed and desirable research would be performed.

Alternative eight would be even with Alternatives four and seven if research costs were assumed to be excessively high or not totally beneficial or cost-effective.

Ranking on the basis of responsiveness of RPA alternatives to goals resulted in the following:

1. Alt. 4 - High All Resources
2. Alt. 2 - High Market
3. Alt. 6 - Implement Plans
4. Alt. 7 - High Present Net Value
4. Alt. 9 - High Productivity
6. Alt. 3 - High Non-Market
7. Alt. 8 - 1980 1980 RPA
8. Alt. 1 - Constant Outputs
9. Alt. 5 - Reduced

36

The selection of one alternative or an amalgamated alternative constructed from parts of several alternatives is beyond the scope of the reviewer given time constraints, information limitations and limitations on specialized experience required for an adequate professional analysis.

10

The HUD concern would primarily be based on the impact alternatives generate as they would be reflected in housing costs, energy costs and community development opportunities.

Although we would have some concern for access to both passive and active recreation as part of the necessary living environment more direct concern would relate to timber production as it translates into housing costs and jobs, changes in water quality and quantity as that effects development and energy related issues.

The USDA-FS has, in my experience, always conducted an intensive and extensive analysis in their planning approach and exhibited ability to meld professional knowledge, public perception and interest and common sense into their management decisions.

Thank you for the opportunity to comment. I look forward to your management program.

Sincerely,

Clifford T. Safranski
Environmental
Clearance Officer, 10.3SE

M-186

DEPARTMENT OF THE AIR FORCE
AIR FORCE REGIONAL CIVIL ENGINEER CENTRAL REGION (AFESC)
1114 COMMERCE STREET
DALLAS, TEXAS 75242

3 February 1984

Mr. Thomas E. Hamilton
Director, RPA
USDA Forest Service
PO Box 2417
Washington, DC 20031

Dear Mr. Hamilton:

This is in response to your request for comments on the Draft Environmental Impact Statement for the 1985-2030 Resources Planning Act Program (RPA'85), provided to us by your letter dated January 13, 1984.

We want to take this opportunity to state our support to the overall planning and management efforts of the Forest Service. We are concerned, however, with the projections of increase in recreation use expressed on page 2-59 and shown in figure 2.11. If those projections are even partly correct there is a potential for conflicts between your user and our requirement to utilize the airspace over the forest for training purposes associated with national security.

While actual conflicts between Air Force flying areas/routes and proposed forest areas do not exist at the present time, routes and airspace requirements of the military are subject to change and do change frequently. Mission requirements, fuel costs, and environmental constraints all act on the decision to locate a military training activity. In particular, low altitude high speed flight, because of general aviation and population pressures, has been relegated to those areas least accessible and sparsely inhabited. For this reason, it is requested that you give full cognizance to the extent to which planning decisions might adversely affect or restrict use of low altitude airspace by the Air Force. It should be noted that if airspace restrictions are placed on low flying military training aircraft, then the Air Force will have to object to such decisions.

We hope this information is useful in your planning process. We thank you for the documentation provided and look forward to continued communication with your office. If you need any additional information, please feel free to contact our staff project officer, Mr. Raymond L. Bruntmyer (commercial telephone number (214) 767-2514, FTS 729-2514.

Sincerely,

LAWRENCE MUNSIE, JR., Col, USAF
Regional Civil Engineer

DEPARTMENT OF THE ARMY
NORTH PACIFIC DIVISION, CORPS OF ENGINEERS
P.O. BOX 2870
PORTLAND, OREGON 97208

Planning Divisio

Jeff M. Sirmon
Regional Forester
Pacific Northwest Region
319 S.W. Pine
Portland, Oregon 97208

Dear Mr. Sirmon:

This is in reference to your undated letter requesting our review and comment of the 1985-2030 Resources Planning Act Draft EIS. These are combined comments from the Portland, Seattle and Walla Walla Districts regarding National Forests in their Districts.

We have reviewed the document with regards to the Corps functional areas of hydropower, navigation, flood control and regulatory functions. Our only comment is that the DEIS does not recognize the hydropower potential of rivers and streams in the National Forests nor the effects of the nine alternatives on the existing and potential hydropower development. The Corps of Engineers performed a detailed national survey of existing and potential hydropower development sites in the 1983 National Hydroelectric Power Resources Study. Data from this study could be used to measure impacts of the different alternatives. Information on this study and copies of regional reports are available from the U.S. Army Corps of Engineers, Institute of Water Resources, Casey Building, Ft. Belvoir, Virginia 22060. **4**

We appreciate the opportunity to review and comment on this report.

Sincerely,

D. E. Olson
Chief, Planning Division

M-187

COLUMBIA RIVER INTER-TRIBAL FISH COMMISSION
2705 East Burnside Street, Suite 114, Portland, Oregon 97214 Telephone (503) 238-0667

April 9, 1984

Thomas E. Hamilton, Director
Resources Program and Assessment
USDA Forest Service
P.O. Box 2417
Washington, D.C. 20013

Dear Mr. Hamilton:

The Columbia River Inter-Tribal Fish Commission offers the following comments on your RPA-85 Draft Environmental Impact Statement (DEIS).

To begin, the commission and its member tribes are extremely dismayed at the complete lack of recognition of the tribes or of the responsibilities the Forest Service has to the protection of tribal treaty rights. Federal agencies are held to the highest fiduciary standards when they deal with Indian treaty rights. The Columbia River tribes reserved certain rights when they signed treaties with the United States government in the mid-1800s. Among these rights is the right to fish at all usual and accustomed fishing places in common with other citizens of the territory. This treaty reserved right to fish is interpreted in the case U.S. v. Washington to include the right to have fish habitat protected from man-made despoliation. In the Columbia River system the Forest Service is the single largest land management entity whose decisions control significant amounts of anadromous fish habitat. Therefore, the Forest Service, under its trust responsibilities, must manage its lands to protect the fish upon which the tribes depend.

In addition to this trust relationship, the Forest Service is constrained by other federal laws which require certain standards of performance. Among these is the National Forest Management Act which directs the Forest Service to coordinate its deliberations with the Indian tribes. Your RPA-85 DEIS is seriously deficient in not only failing to state the Forest Service trust responsibility to the tribes but also in not assessing the impacts to the treaty rights from each and every alternative.

The Columbia River treaty tribes when they reserved the rights listed above ceded vast areas of the land to the United States. The ceded area in the Columbia Basin spans Regions 1, 4, and 6 and includes fifteen national forests. Over 70% of the anadromous fish spawning and rearing habitat in the Basin is contained within national forest boundaries. Research and experience have shown that current cut regimes have adversely impacted fish and wildlife resources. And yet you offer alternatives that would increase the cut. These alternatives are especially ludicrous when you consider that millions of board feet of sold timber remain standing on Region 1 lands.

To counteract expected adverse impacts to the fish and wildlife resources, you include mitigation funding to remedy losses, funding which you say depends upon a high cut. At this point in history it is painfully obvious that attempting to recover or restore resources that have been lost is not only unnecessarily expensive but also quite inadequate. Mitigation can not and has not been **33**

sufficient to replace anadromous fish losses in the Upper Columbia Basin. This situation is compounded by the fact that the Forest Service in the past several years has under-funded its own fish and wildlife programs. It is difficult for the tribes to accept anything less than forest land management specifically for the enhancement and restoration of the anadromous fish resources.

Since your format requires a choice of alternatives, we conclude that the only alternative that could be acceptable would be one in which no environmental damage would be sustained to the salmon and steelhead resources. In this regard, we would support Alternative 3 with certain modifications. Those modifications are:

1) full recognition of tribal fish and wildlife co-management responsibilities be given to the tribes who hold treaty reserved rights to resources within the domain of the U.S. Forest Service;

2) that the DEIS be revised to include an analysis of the impacts of each alternative upon the treaty rights listed above. We realize that site specific impacts cannot be precisely determined in a document that encompasses the entire United States. However, certain impacts can be estimated with relative accuracy when one considers past applications of Forest Service policy to Northwest timber harvest and management regimes;

3) that the cut level be maintained at the 4.5 bbf until it can be shown that an increase would allow for enhanced populations of salmon and steelhead;

4) that fish and wildlife programs be fully funded and immediately implemented; and that this funding include research into resolutions of conflicts between range and forest land management and fish resources; restoration of previously lost anadromous fish habitat; and installation of qualified fishery biologists on <u>all</u> national forests within Regions 1, 4, and 6.

The commission staff has been working well with regional and forest staffs for several years in resolving problems with regard to the anadromous fish resources. We hope that this relationship can continue. We also hope that the national level of the Forest Service recognizes the importance in maintaining an active role in the federal government's trust responsibility to Indian tribes.

Sincerely,

S. Timothy Wapato
Executive Director

M-188

LUMMI INDIAN BUSINESS COUNCIL
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April 6, 1984

Forest Service
Pacific Northwest Region
P.O. Box 3623
Portland, OR 97208

The Lummi Fisheries Program has reviewed the Draft Environmental Impact Statement for the Draft Resources Planning Act Program, and has the following comments.

<u>FISHERIES</u>

The Lummi Indian Tribe has a treaty right to fish and wildlife resources which occur on National Forest lands. The USFS has a trust responsibility and legal mandate to manage the habitat to not negatively impact those legal reserved treaty resources.

This Draft Environmental Impact Statement is extremely deficient in the manner in which it addresses fisheries issues, especially in relation to the tribes' treaty rights. The United States has a trust responsibility to take no actions which will adversely affect tribal interests. 8

This DEIS is difficult to read and review, and it is difficult to evaluate the proposed alternatives. It seems that, under many of the alternatives, there will be some losses in anadromous fisheries habitat. This is completely unacceptable to the tribe. We will not accept a decline in fisheries habitat, which contributes to the health of downstream fisheries.

Further, the DEIS does not discuss in enough detail the relationship with, or possible conflicts over, habitat and fisheries management between the Forest Service and the state agencies. Since fish and wildlife resources are co-managed within the State of Washington by both the tribes and the state agencies, the Forest Service must add into this document a discussion of how the proposed alternatives affect the Tribal/State <u>Co-management</u> situation as it currently is: ordered by both the federal court and the federal trust responsibility.

Also, this DEIS is extremely deficient in how its presentation, development and referencing of the information that is used in the calculation of the effects of the proposed alternatives on fisheries habitat, production, and management. These failings, a lack of good references, and the lack of an adequate bibliography, make it impossible to analyze the 40

document in any meaningful way.

The Tribe's position is that the U.S. Forest Service should eliminate any alternative from their list of options which violate federal law. This includes the Federal Water Quality standards, and regional and local requirements, such as the trust responsibility of the federal government, and the co-management situation mandated by the federal courts within the Boldt Case Area. Then, a resource inventory and discussion of the proposed tradeoffs can take place in a situation recognizes existing legal constraints. This DEIS, as it stands, does not adequately discuss tradeoffs under various alternatives, legal constraints, and proposed implementation of the alternatives.

CULTURAL USE

The issue of Native American cultural use of National Forest lands remains an area of oversight in the current (draft) RPA. The importance of commercial forest lands in this region, and elsewhere, has been extensively documented, as in the Inventory of Native American Religious Use Practices, Areas, and Resources on the Mt. Baker-Snoqualmie National Forest. To date, the RPA has yet to include this issue in determining the relative costs and benefits of any of the proposed alternatives. The issue of cultural use is not mentioned in the RPA, despite repeated attempts to introduce this issue at the National level.

The issue goes beyond matters of acreage, dollars and cents. It necessarily includes the consideration of a particular series of cultural values which give meaning to the religious use of National Forest lands. The Department of Agriculture, in responding to the American Religious Freedom Act Task Force Report (1979: Department of the Interior) stated it would modify, where necessary, its plans and processes to consider Native American religious concerns. The current RPA fails to carry through on this statement of policy.

With this background, we respectfully submit the following recommendations in modification of the RPA:

1) the inclusion of Indian Cultural Use of National Forest lands as an issue in the National Program;

2) evaluating the impact of the various alternatives on the availability of cultural and religious resources (documentation is available in the Northwest and Southwest regions);

3) including the following values in an assessment of the nature and degree of impact on cultural resources: privacy, purity, and isolation.

4) re-examination of the planning process to determine its responsiveness to the AIRFA.

Should the current draft RPA ignore the importance of this issue, it will be necessary to evaluate the entire planning process at the National, Regional, and Forest level through Congressional action. We appeal to you to improve the RPA along the lines recommended, above.

The Lummi Fisheries Program appreciates the opportunity to review and comment on this document. Please feel free to contact this office for further information.

Sincerely yours,

Jewell P.W. James, Director
Natural Resources
LUMMI INDIAN BUSINESS COUNCIL

JPWJ:mlc

M-190

SQUAXIN ISLAND TRIBE

WEST 81 HIGHWAY 108
SHELTON, WASHINGTON 98584
(206) 426-9781

April 6, 1984

Mr. Jeff Sirmon, Regional Forester
U.S. Forest Service
Pacific Northwest Region
319 SW Pine St.
P.O. Box 3623
Portland, OR 97023

Dear Mr. Sirmon:

The Squaxin Island Tribe has reviewed the RPA DEIS and is very concerned about the planned levels and array of future resource outputs on National Forests. Our primary concern is the protection of our treaty right. The Puget Sound Tribes signed treaties with the Federal Government which guaranteed the rights of the Tribes to take fish and hunt in their "usual and accustomed areas". **8**

Recent court decisions have affirmed the treaties and ruled that:

1) Treaty rights are essentially property rights and that Tribes have a right to 50% of the salmon/steelhead resource;
2) Due to the current economic conditions of the treaty Tribes any further reductions in fish populations are a violation of the Treaties;
3) The Tribes have the interest, the expertise, and the right to be co-managers of the salmon/steelhead resource with the state; and
4) Federal agencies have a trust responsibility to protect the treaty rights of Indian Tribes.

In addition to the recent court decisions the Indian Religious Freedom Act requires that Indian Tribes be allowed to continue practicing their religion in the traditional manner on federal lands. By definition this means that not only must Tribal members be allowed access to the areas of religious and cultural significance, but those characteristics which make these areas significant must be preserved.

On page 3 of the Study Guide the assessment is discussed. In this section you acknowledge that the assessment provides the foundation for the RPA Program, and that information for the assessment came from a variety of sources including consultation with other agencies. However, the Forest Service did not consult with Indian Tribes to determine their fisheries, wildlife or religious needs. Consequently, the assessment and the subsequent RPA Program are seriously deficient in addressing the needs of Indian Tribes. **40**

The Forest Service persists in its belief that it can manage fish and wildlife habitat in any manner it deems consistent with its timber management objectives. It has never, for instance, met with the state and Indian Tribes to find out what our management goals for anadromous fish production are, and what habitat management plans the Forest Service should develop to assist in the accomplishment of these goals. Rather, the Forest Service continues to tell us, as they do in the DEIS, that anadromous fish habitat will decline. It is unacceptable to us that the Forest Service is dictating what the appropriate levels of fish and wildlife populations are on the National Forests when these are clearly contrary to our interests and consequently illegal.

We strongly object to the statement that "no major national or regional conflicts are identifiable at this time" expressed on page 4-40. Clearly in the Pacific Northwest anadromous fisheries are at center of a major conflict involving a variety of interests. The increasing demand for this diminishing resource is causing friction between user groups, and also between habitat exploiters and habitat protectors. There is a growing recognition that a cooperative effort will be required to save the resource. One example is the effort of the Northwest Power Planning Council to identify anadromous fish habitat in the region which should be protected from hydroelectric development. We feel it is imperative that the Forest Service recognize these efforts and modify its resource assessments and develop goals and alternatives that are legal and consistent with the goal and objec-

tives of Indian Tribes and other federal and state agencies concerned with fish and wildlife resources

Sincerely,

David W. Whitener
Tribal Chairman

DW/BW/KB

cc: Honorable Sidney Yates, Congressman, House of Representitives
Honorable Norm Dicks, Congressman, House of Representatives
Honorable Les Au Coin, Congressman, House of Representatives
Honorable Jim Weaver, Congressman, House of Representatives
Mr. Ray F. Maldonado, Superintendent, Bureau of Indian Affairs

Northwest Indian Fisheries Commission

April 6, 1984

Mr. Jeff Sirmon
Regional Forester
Forest Service USDA
P.O. Box 3623
Portland, OR 97208

RE: Comments on the 1985 RPA Program

Dear Mr. Sirmon:

The Northwest Indian Fisheries Commission, which coordinates and represents the fisheries management policies and habitat-protection concerns of the western Washington treaty Indian Tribes, has the following comments on the 1985 Resources Planning Act Program Draft Environmental Impact Statement.

One concern we have is there were no preparers or members of the Interdisiplinary Team with any fisheries background. The Forest Service should have added a fishery biologist with anadromous as well as freshwater fisheries experience to address management and habitat issues.

To adequately address the Forest Service's trust responsibility, the Tribes must be included as resource managers with state and federal agencies under the RPA section on Wildlife and Fish. Federal courts have clearly established the Tribes as managers of the Salmon and Steelhead resource and technically capable of carrying out that responsibility. **8**

The Tribes have recently expanded their role in protecting fish habitat by coordinating and facilitating habitat protection activities between the Tribes and other government agencies. This is to carry out the court affirmed treaties which serve to prevent the state and federal governments from participating in or permitting projects potentially harmful to the habitat. The Forest Service must consider tribal concerns on issues affecting fish habitat.

As far as anadromous fish are concerned, the Tribes consider additional loss of fish or fish habitat unacceptable. The Forest Service as well as other agencies have a responsibility to protect and enhance these resources to perpetuate a tribal cultural and economic way of life. **10**

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Mr. Jeff Sirmon
4/6/84
page two

Thank you for this opportunity to comment on the 1985 RPA.

Sincerely,

Bill Frank Jr.

BILL FRANK, JR.
Chairman

DPM:cm

cc: Tribes
Congressman Yates
Congressman Dicks
Congressman Weaver

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POINT NO POINT TREATY COUNCIL
7850 N.E. Little Boston Road
Kingston, Washington 98346
Ph. 297-3422

U.S. Forest Service
Pacific Northwest Region
319 S.W. Pine Street
Box 3623
Portland, OR 97208

Re: Draft Environmental Impact Statement
Resources Planning Act Program for 1985-2030

Dear Sirs,

The Point No Point Treaty Council is a consortium of four treaty tribes with adjudicated fishing rights in marine waters of the Strait of Juan de Fuca, Admiralty Inlet and Hood Canal and streams and rivers that drain into these areas. These tribes are the Skokomish Tribe (Hood Canal) and the Lower Elwha, Jamestown and Port Gamble Bands of Klallams (Hood Canal and Strait of Juan de Fuca). The tribes' interest in the RPA process derives from their treaty rights to fish and wildlife resources which depend upon proper management of national forest lands.

We believe that the management plans described in the Draft RPA are seriously flawed in that they provide inadequate protection and/or consideration to the needs of fish and wildlife. Some of our concerns, with recommended changes, are outlined below. 8

Of greatest concern to us is the apparent willingness to sacrifice fisheries habitat to accomplish other purposes viewed more important by the Forest Service. This is unacceptable to the Point No Point Treaty Council Tribes, whose economies are dependent upon productive fisheries habitat. We believe that the Forest Service, as an agency of the federal government, has a trust responsibility to adequately protect the resources upon which the tribes' treaty rights depend. Failure to do so is viewed as an abrogation of this responsibility. 10

Some parts of the draft plan are too general for proper evaluation. For example, on page 4-36 it is stated: "Habitat for resident trout and anadromous fish would decline from 10 to 65 percent in all Regions with the exception of Region 10 (Alaska)." There are a number of problems with interpretation of this statement. What is the reduction in each region? What are the impacts to treaty fishing rights? The DEIS seems to contradict itself when it states that "At a minimum, individual resource objectives should comply with legal requirements". What are these requirements, and do they include, (as they should), the legal requirement to protect treaty-reserved resources? 34

We find the data concerning fisheries, wildlife and water quality in the DEIS to be poorly organized and inadequately documented. Most fisheries and wildlife information is listed in "wildlife/fish user days" (WFUD's). The WFUD measure is misleading not only because fisheries data is combined with wildlife data, but also because the WFUD measure is a meaningless measure for assessing impacts on treaty reserved fishing rights, which are more closely related to levels of catchable fish (i.e. fish production) in discrete areas. Although there are some references to anadromous fisheries production in pounds of fish (p. 2-6), these have not been used for comparative analysis (see, e.g., p. 2-7) of impacts. **40**

The absence of a bibliography, inadequate documentation of fisheries information and calculations, and the absence of fisheries experts on the interdisciplinary team, all tend to make it difficult to analyze the accuracy of the data. To be usable, the Plan must include information on how it was developed, with appropriate references to other documents.

Another basic issue which is not addressed in the DEIS is the relationship between Forest Service jurisdiction over habitat and tribal/state jurisdiction over the fish and wildlife. For example, on page 4-40 reference is made to possible conflicts between RPA and state fish and game agencies. Conflict with Tribal concerns have been strangely overlooked. More importantly, the Plan seems to imply that the Forest Service can manage the habitat in a manner which vitiates tribal and/or state management efforts. While we recognize the Forest Service's authority to manage forest lands, we feel that much more consideration must be given to fish and wildife impacts which result from the land management practices. **33**

A related jurisdictional issue is raised with regard to water quality (page 4-40).It is stated that local water quality standards might be higher than can be met under some of the alternatives. Those standards are federal law applied to the Forest Service through the Federal Water Pollution Control Act. This was recently interpreted by the Federal District Court for Northern California as prohibiting the Forest Service from road building and logging when those activities cause a violation of California's water quality standards.

The EIS should state the appropriate standards, and provide an analysis of the impacts to the fishery resources should those standards be changed.

The various resource goals and alternatives seem to have been developed in ignorance of each other. No explanation is given of tradeoffs between resources under the various alternatives. So, while one alternative is admitted to cause a 10 to 65% reduction in anadromous fisheries habitat, it is elsewhere claimed that "unavoidable adverse effects such as loss of fish habitat are usually restricted and local in extent" (Unavoidable Adverse Effects - page 4 - 38). **34**

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On page 4-40 it is claimed that "no major national or regional conflicts are identifiable at this time." We believe that 10 to 65% losses of anadromous fish habitat are at least a regional issue. The Northwest Power Planning Council is in the process of identifying anadromous fish habitat in this region which should be protected from hydroelectric development. The Forest Service should also be involved in this process, since it would be absurd to protect areas from dams only to have the Forest Service disregard this effort when preparing land management plans.

The Forest Service should eliminate alternatives which violate the law. An EIS should be prepared which starts with a recognition of what the national and regional and local legal requirements are (such as the Power Act and Treaty rights). Then resource inventory and tradeoff information can be used to develop alternatives which "comply with minimum legal requirements."

Despite pages 2-1 to 2-5 and Appendix D, it is difficult to determine how the alternatives were put together. There is no explanation of the policy decisions behind the resource output mix incorporated into each alternative other than the general title. As previously stated, we need to have documentation on how fisheries information was compiled and incorporated into the alternatives.

Thank you for the opportunity to comment on the draft plan.

Sincerely,

William A. Sandoval/by M.S.

William A. Sandoval
Fishery Biologist

WAS/ms

cc: Tribal Fishery Managers

The Klamath Tribe
P.O. Box 436
Chiloquin, Oregon 97624
Telephone (503) 783-2219

Mr. Jeff Sirmon
319 S.W. Pine
P.O. Box 3623
Portland, OR 97208

Dear Mr. Sirmon:

On behalf of the Klamath Indian Game Commission I would like to respond to the RPA document. The Commission is responsible to speak on behalf of the tribe on issues related to treaty hunting and fishing rights.

The tribe, though the Game Commission, has management responsibilities both over the tribal members and with the resources. In regard to resource management, the RPA process provides an opportunity to coordinate future activity with resource needs.

Meetings with the local National Forests have been beneficial for the commission to understand RPA. Through our discussions and the literature provided the Game Commission recommends the following action. There is a problem however with the RPA document. It is difficult to understand how certain conclusions were developed. There is not enough time to respond adequately to the issues.

The Game Commission supports alternative number five. This alternative is the only one that will provide adequate resource management without excessive overharvest. Within the area where tribal members may exercise treaty rights (Winema and Fremont National Forests) there are a number of critical resource concerns. **8**

Sincerely,

Leonard O. Norris, Jr.

Leonard O. Norris, Jr.
Chairman
Klamath Indian Game Commission

LON/rt

The Klamath Tribe
P.O. Box 436
Chiloquin, Oregon 97624
Telephone (503) 783-2219

Mr. Jeff Sirmon
319 S.W. Pine
P.O. Box 3623
Portland, OR 9720

Dear Jeff:

Thank you for meeting with me last week to discuss several issues of the Klamath Tribe. I also appreciate the opportunity to examine our mutual resource concerns. This includes the most pressing issue of the RPA response.

As we discussed in our meeting the April 9th deadline does not provide enough time to review and respond properly to RPA. The document is lengthy, sometimes difficult to understand and confusing related to the evaluation. Conclusions that are developed within the RPA documents are dissimilar to those of the tribe.

The Klamath Tribe cannot support any of the alternatives as they are described. Neither the documents nor the alternatives address Indian Treaty Rights. In addition, there are statements and graphs, which indicate that land management activities will result in improvements beyond which no management activity would achieve. The previous tract record of the Forest Service would not support this. And, I believe this is simply not true. Mitigation is no substitute for extinction. **8** **33**

Described in the "Purpose and Need for Action" are present and future resource needs. I believe these needs should be seperated into renewable and nonrenewable for the purpose of evaluation. It would also be helpful to address consumptive and non consumptive resources. Mule deer are essential to the Klamath Tribe for subsistance hunting, purposes however, through the evaluation of RPA there are more dollars associated with viewing then consumption. Breaking the Evaluation into more realistic catagories would change the description of the environmental consequences.

Specific to our conversation were a number of items that are critical in the area where the tribe continues to exercise treaty rights. The area of concern is on Winema and Fremont National Forests. Issues identified were water resources and minimum stream flows, timber sale extensions which create a problem for forage management, poor sale design, previous administrative philosophies, and future entry and spacing of units problems. Other issues, while discussed, are less important here.

As you suggested, the Klamath Tribe has selected alternative number 5 as the best alternative to meet the tribal treaty rights issues. This alternative is preferred above all the others because, as stated "This is the only alternative that will result in effects that are substantially below current". (pg. 4-23). Current harvest levels of timber have created ecological problems that will take between 30 and 50 years to recover. By reducing the required timber harvest level better coordination can be anticipated for the spacing between harvest units and the timing of treatments. This would also allow for less emphasis on timber harvest and more on ecosystem management.

I do not believe we fully understand the complex interaction that exists in our natural world. A reduction in the total impact is essential now to provide an opportunity for future resource management.

Sincerely,

Charles E. Kimbol, Sr.
Chairman
Klamath Tribe

CEK/rt
cc: Eugene Eggleston, BIA